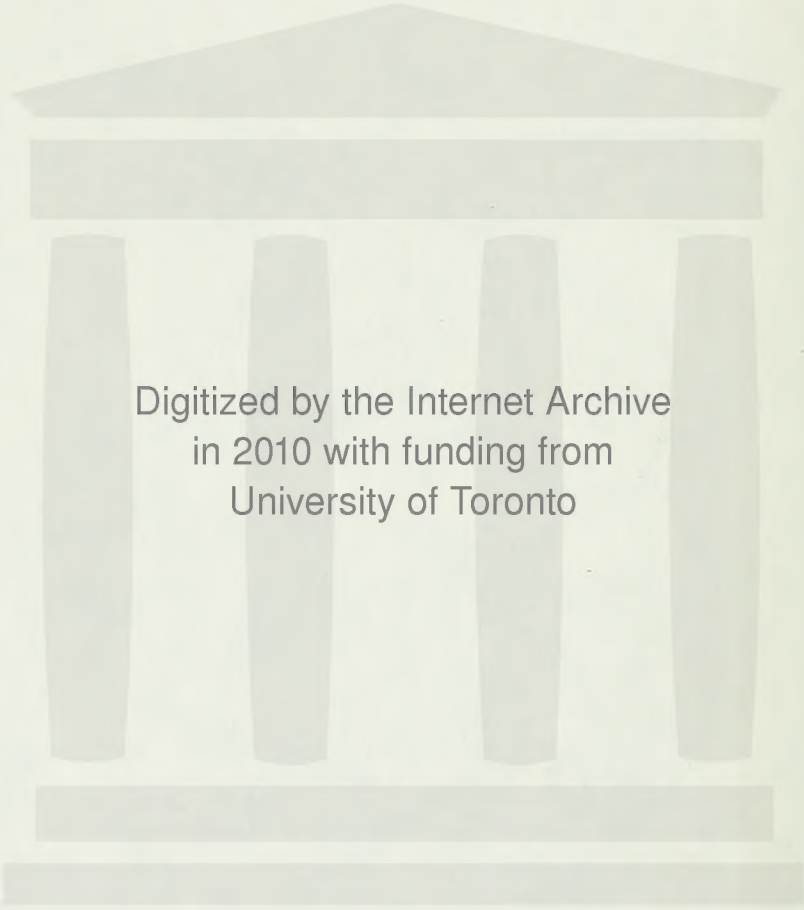


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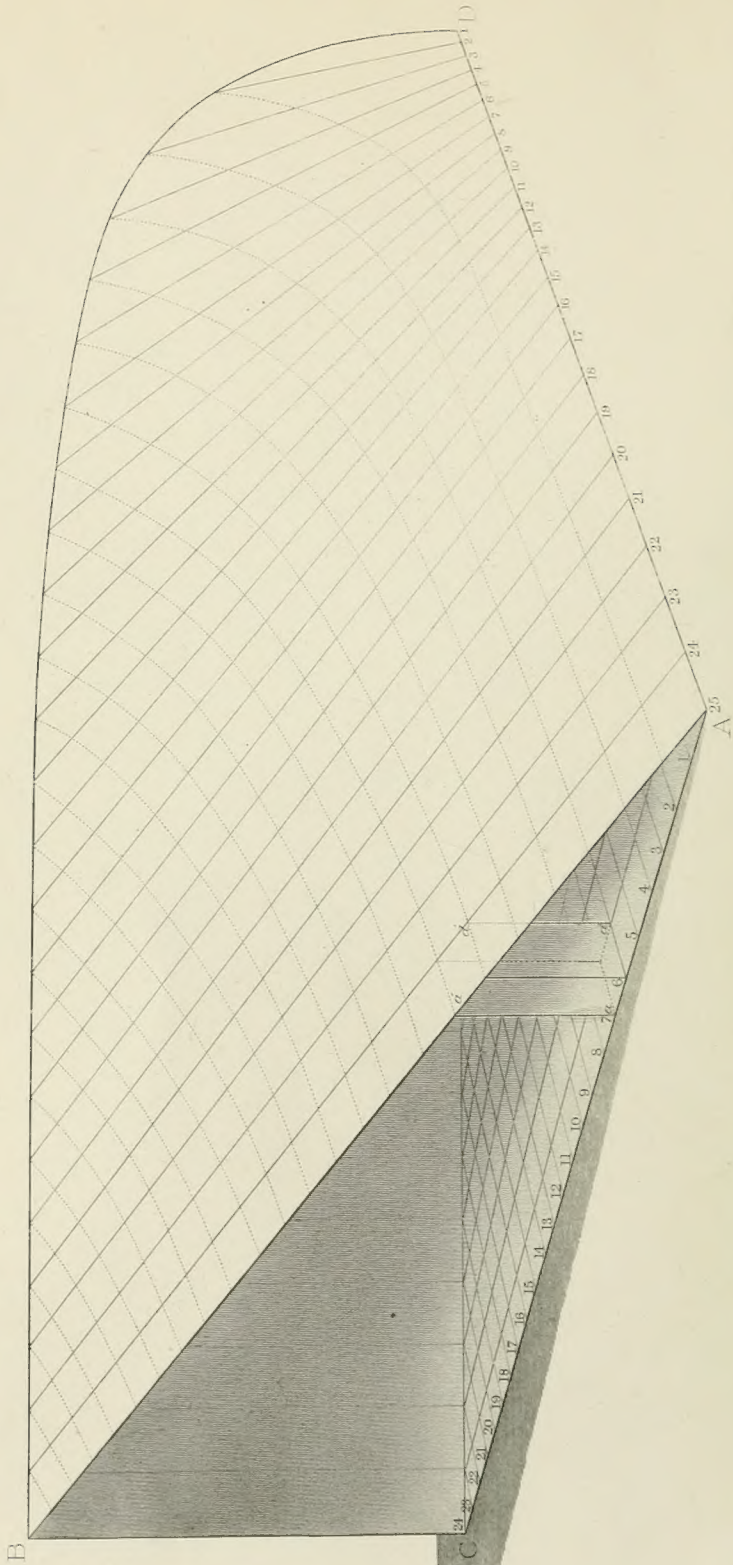




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*Method representing the Sums of the Values of Policies of all Durations according to any Table of Mortality or Rate of Interest.*

*(see Introduction: Art. 10)*

# TABLES

FOR FINDING THE

# VALUES OF POLICIES,

OF ALL DURATIONS,

ACCORDING TO ANY TABLE OF MORTALITY,

OR ANY RATE OF INTEREST,

WITH OTHER USEFUL TABLES.

BY

JAMES CHISHOLM,

FELLOW OF THE INSTITUTE OF ACTUARIES, LONDON, AND OF THE FACULTY  
OF ACTUARIES, SCOTLAND;

MANAGER AND ACTUARY OF THE IMPERIAL LIFE INSURANCE COMPANY.

LONDON:

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FARRINGDON STREET.

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## PREFACE.

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ABOUT two years ago it occurred to the author that a complete Table of Policy-values might be constructed, not upon the basis of annuity-values derived from any particular table of mortality or rate of interest as had hitherto been the custom, but upon the basis of a series of arbitrary annuity-values within sufficiently wide limits to include those which might be derived from any given data. On submitting the proposal to the actuarial profession, the idea was warmly encouraged both in this country and abroad. The necessary calculations were accordingly undertaken, and the Tables comprised in this volume are the result.

As the work proceeded it led to extensions and illustrations of the original idea which had not at first been thought of, and the desire to include all such additions as were likely to prove either useful or interesting has necessitated a considerable further amount of labour and has delayed the publication until now.

The subsidiary Tables of "Sums of Policy-values" afford the means of comparing the reserves brought out according to different standards of valuation. The result of all such comparisons must be to effect

a gradual displacement of those standards which give weak reserves. The movement among Life Assurance Companies in England in favour of reserves based upon the Institute Tables of Mortality has been most marked in recent years. At one time the Carlisle Mortality with 3 per cent. interest was generally recognised as affording the most stringent reserves that could be devised, but while the Carlisle Table may still justly hold its pre-eminence as a basis for the calculation of premiums, an examination of the results given in the subsidiary tables and of the diagrams which accompany them will show that almost throughout its whole course, but more especially for policies of long duration, the Carlisle Table with 3 per cent. interest yields considerably less reserves than the  $H^M$  Table with  $3\frac{1}{2}$  per cent. interest; and for a great many policy durations, at nearly all ages at entry, its reserves are less than those of the combined  $H^M$  and  $H^{M(5)}$  4 per cent. Table. At first sight it would almost seem that the strongest reserves of all, greater even than those of the combined  $H^M$  and  $H^{M(5)}$  Table, are yielded throughout by the American Experience Table. And this would certainly be the case if the lives assured all entered over 45 years of age and if the policies were of long duration, but we know that these are conditions which do not generally obtain in practice, and when the conditions are reversed the result that ensues is exactly the opposite. It follows, therefore, that no comparisons are of any value which leave out of account the weight of observations.

The reserves brought out by a valuation on the basis of the combined  $H^M$  and  $H^{M(5)}$  Table are, however, stronger than are necessary. Investigations as to the influence of selection made since the Institute Mortality was published, have shown conclusively that at the younger ages the  $H^M$  premiums are not sufficient to meet the risk of assurance under whole-life policies, and that at the older ages they are more than

sufficient to do so. This arises from the fact that the continual influx of freshly-selected lives unduly depresses the rate of mortality at the younger ages, while the suspended mortality from these same lives, coupled with the absence of freshly-selected entrants in the same proportion, tells with undue weight on the mortality at the older ages. When the correct risk premium,  $\pi_{[x]}$ , is taken into account, the formula for the valuation of all policies over 5 years' duration becomes

$${}_nV_x = A_{x+n}^{\text{H}^{\text{M}(5)}} - \pi_{[x]}^{\text{H}^{\text{M}}} (1 + a_{x+n}^{\text{H}^{\text{M}(5)}}) = 1 - \frac{1 + a_{x+n}^{\text{H}^{\text{M}(5)}}}{1 + a_{[x]}^{\text{H}^{\text{M}}}},$$

and, in the opinion of the author, this should be looked upon as the standard of valuation on the  $\text{H}^{\text{M}}$  basis in all cases where the business is valued as that of a going concern.

The principal Tables have been extended beyond the original design to afford the means of finding the amounts of paid-up policies. The suggestions of the use of the Tables for this purpose and of the general application of the formula  $1 - \frac{A}{B}$ , referred to in Art. 17 of the Introduction, are due to his friend, Mr. GERALD H. RYAN, F.I.A., to whom the author has besides to express his obligations for the careful and thorough revision of many of the proof-sheets, and for a very large share in the labour of the original calculations.

The author is also indebted to Mr. A. H. BAILEY for many valuable suggestions drawn from the stores of that wide experience which he so readily places at the service of his professional brethren. To Mr. T. B. SPRAGUE, the author has to return his cordial thanks for the Select-Life Annuity and other values, some of them not previously published, the fruit of extensive and valuable researches most generously placed at his disposal.



The annuity-values brought together for reference, and shortened to three places of decimals for the sake of uniformity, have been drawn from various sources ; the Carlisle, from Chisholm's Commutation Tables, except the values at  $4\frac{1}{2}$  per cent., which have been taken from David Jones ; the Equitable (Davies's), from Davies's Tables of Life Contingencies, 1825 ; the Seventeen Offices, from the Tables of Jenkin Jones ; the English (No. 3 Males), from Farr's English Life Table for the values at 3 and 4 per cent., and from the Tables in Filipowski's edition of Baily for those at  $3\frac{1}{2}$  and  $4\frac{1}{2}$  per cent.; the Actuaries'  $H^M$  and  $H^{M(2)}$ , from the Institute Tables, by permission of the Council, except the values at  $4\frac{1}{2}$  per cent., which have been taken from Hardy's Valuation Tables ; the American Experience, from manuscript kindly furnished by the Managers of the Mutual Life Office of New York ; the Thirty American Offices, from the "System and Tables of Life Insurance" ; and Duvillard at 4 per cent. from "Théorie des annuités viagères et des assurances," by M. Maas.

The author would beg to express here his acknowledgments to all those from whom contributions have been drawn, and whom he has not been able otherwise to thank.

The principal Tables have been printed upon a toned paper. It was thought that by doing so they would be more readily distinguished from the other Tables in the book, thus facilitating reference to them, and that at the same time the tone would be less trying to the eye than the brightness of a white paper.

The type has been set up by Messrs. C. & E. Layton with their well-known accuracy ; and it is hoped that the care taken in passing the Tables through the press, and in recalculating the whole work after it had been printed, has allowed no error to escape. The author

has himself calculated once—either by original calculation or as a check—every individual value in the principal Tables, while the duplicate calculations have been made by different computers using different machines.

The Tables of “Sums of Values” were computed by Mr. H. E. NIGHTINGALE, of the Royal Exchange Office, with great care and accuracy; and the results were verified by casting the columns and checking the totals, as explained in the Introduction.

It has been thought useful to bring together a number of formulas on the continuous method, drawn from Mr. Woolhouse’s standard paper “On an Improved Theory of Annuities and Assurances” (*Journal of the Institute of Actuaries*, Vol. XV., p. 95), and these have been printed on a single page at the close of the subsidiary Tables. The values of  $\mu_x$  immediately following them have been calculated by means of the approximate formula  $\mu_x = \frac{l_{x-1} - l_{x+1}}{2l_x}$ .

In conclusion, the author desires to express to the subscribers, a list of whom will be found at the close of the Tables, his warm acknowledgments of the support and encouragement they have extended to him in the production of the work, and he trusts that by the labour he has expended on it he has succeeded in making it worthy of the confidence of the profession.

J. C.

1, OLD BROAD STREET, E.C.,

23rd March, 1885.





# INTRODUCTION.

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1.—The following paragraph occurs in a letter written in the year 1867 by the late Professor De Morgan and published in the *Journal of the Institute of Actuaries*, Vol. XIV., p. 69 :—

“ There is a theorem which I suppose must be in the heads of many actuaries, but I cannot find it in any of the books. It is that the values of a policy, as it runs on, are proportional to the falls in the value of the annuity. That is, if  $a_x$  be the value of an annuity of £1 at the age  $x$ , the age of creation of the policy, the values of the policy at the ages  $y$  and  $z$  are as  $a_x - a_y$  to  $a_x - a_z$ . That this theorem is not commonly expressed seems due to the value at the age  $y$  being usually written  $1 - \frac{1 + a_y}{1 + a_x}$  instead of  $\frac{a_x - a_y}{1 + a_x}$ .”

The Tables for finding policy-values published in this volume are founded on the general formula

$$V = 1 - \frac{1 + a - \Delta a}{1 + a} = \frac{\Delta a}{1 + a}.$$

A succession of arbitrary values, within certain limits stated in Art. 26, has been given to  $1 + a$  and to  $\Delta a$ , and the results brought out by the formula will therefore be a series of policy-values quite independent of any Table of Mortality or Rate of Interest.

2.—In printing the Tables, the results have been arranged in a succession of columns, and at the head of each column is given the value of  $1 + a$  on which the series of policy-values underneath is based; while at the left-hand margin, instead of printing the function  $\Delta a$ , the corresponding function,  $1 + a - \Delta a$ , has, for convenience of reference, been given. It is therefore only necessary to know the value of a life annuity on any particular basis at the time a policy was taken out, (which we shall call the initial annuity-value,) and the value of an annuity on the same life and on the same basis at the date of valuation, (which we shall call the terminal annuity-value,) in order to find the policy-value.

And just as we enter Orchard's Tables of Assurance Premiums with two arguments,—the annuity-value and the rate of interest,—in order to find the premium, so we shall have to enter these new Tables with two arguments,—that is,  $1 +$  the initial annuity-value and  $1 +$  the terminal annuity-value,—in order to find the policy-value.

3.—The formula given in Art. 1 for the value of a policy is derived, as follows, from a valuation, at the age attained, of the difference between the rate of premium at the entry-age and the rate of premium at the valuation-age:—

$$\begin{aligned} {}_nV_x &= (\pi_{x+n} - \pi_x)(1 + a_{x+n}) \\ &= \left\{ \left( \frac{1}{1 + a_{x+n}} - d \right) - \left( \frac{1}{1 + a_x} - d \right) \right\} \times (1 + a_{x+n}) \\ &= 1 - \frac{1 + a_{x+n}}{1 + a_x}. \end{aligned}$$

The assumptions herein involved are

1. That the premiums are based on the same rates of mortality and interest that are used in the valuation.
2. That  $\pi_x$  and  $\pi_{x+n}$  are the premiums at the exact ages at entry and at valuation.
3. That the premiums are payable annually, and
4. That a premium is just due.

Hence, while  $x$  may assume any value, whole or fractional, within the limits of age,  $n$  must always be a whole number; and the formula is therefore only applicable for finding the value of a policy renewable by annual premiums and at the end of a complete year of risk.

4.—By a slight modification, however, the formula may be readily applied to the valuation of a policy of any number of years' duration, whole or fractional.

We have  ${}_nV_x = (\pi_{x+n} - \pi_x)(1 + a_{x+n})$ .

But  $\pi_{x+n}(1 + a_{x+n}) = A_{x+n}$ , and the expression may therefore be written

$${}_nV_x = A_{x+n} - \pi_x(1 + a_{x+n}).$$

And, on the usual assumption of an even distribution of deaths throughout the current year of risk, we have the policy-value at the end of  $n + \frac{t}{m}$  years, (the premium due at the beginning of the  $n$ th year having been already paid,)

$$\begin{aligned}
 {}_{n+\frac{t}{m}}V_x &= A_{x+n+\frac{t}{m}} - \pi_x \left( \frac{t}{m} + a_{x+n+\frac{t}{m}} \right)^* \\
 &= A_{x+n+\frac{t}{m}} - \pi_x (1 + a_{x+n+\frac{t}{m}}) + \frac{m-t}{m} \cdot \pi_x \\
 &= 1 - \frac{1 + a_{x+n+\frac{t}{m}}}{1 + a_x} + \frac{m-t}{m} \cdot \pi_x.
 \end{aligned}$$

If, therefore, a preliminary table be prepared of the functions  $a_x$  and  $\pi_x$ , interpolated for  $m$ th parts of a year, the policy-value at the end of the  $t$ th part of a current year of risk may be found by the addition of  $\frac{m-t}{m} \cdot \pi_x$  to the value obtained from the Tables.

If the policy-value be required at the end of  $n + \frac{1}{4}$ ,  $n + \frac{1}{2}$  or  $n + \frac{3}{4}$  years respectively, the above formula becomes

$$\begin{aligned}
 {}_{n+\frac{1}{4}}V_x &= 1 - \frac{1 + a_{x+n+\frac{1}{4}}}{1 + a_x} + \frac{3}{4} \pi_x. \\
 {}_{n+\frac{1}{2}}V_x &= 1 - \frac{1 + a_{x+n+\frac{1}{2}}}{1 + a_x} + \frac{1}{2} \pi_x. \\
 {}_{n+\frac{3}{4}}V_x &= 1 - \frac{1 + a_{x+n+\frac{3}{4}}}{1 + a_x} + \frac{1}{4} \pi_x.
 \end{aligned}$$

5.—The following examples illustrate the use of the Tables for finding the values of policies for the whole term of life at uniform annual premiums:—

1. To find the value of a policy for 100 effected at age 44, at the end of 15 years, by the Institute of Actuaries' Experience H<sup>M</sup> Table, Interest 3½ per cent. :—

Here $1 + a_{44} = 16.001$ and $1 + a_{59} = 11.180$ , and we enter the	
Tables with the two values, 16.00 and 11.2, finding the	
policy-value set down as . . . . .	30.000
Add correction by proportional parts ( <i>see</i> Art. 28) . . . . .	.125
Total policy-value . . . . .	30.125

NOTE.—The value by Hardy's Tables is 30.128.

\* NOTE.—If the first payment of an annuity on  $x$  be due at the end of  $\frac{1}{m}$ th,  $\frac{2}{m}$ th,  $\frac{3}{m}$ th, parts of a year, the approximate values are respectively,  $\frac{m-1}{m} + a_x$ ,  $\frac{m-2}{m} + a_x$ ,  $\frac{m-3}{m} + a_x$ , and generally if the first payment be due at the end of  $\frac{m-t}{m}$ th parts of a year, the value will be  $\frac{t}{m} + a_x$ . (*Journal*, Vol. XIII., p. 189).

2. To find the value of a policy for 100 effected at the office age of 32, after  $10\frac{1}{2}$  years' duration, by Duvillard's Mortality Table, and 4 per cent. interest:—

Here $1 + a_{32} = 15.710$ and $1 + a_{42\frac{1}{2}} = 13.769$ , and entering the Tables with the two values, 15.70 and 13.8, we find the policy-value set down as . . . . .	12.102
Add correction by proportional parts ( <i>see</i> Art. 28) . . . . .	.197
Policy-value from Tables . . . . .	12.299

NOTE.—The policy having run for  $10\frac{1}{2}$  years only, the value must be increased by the addition of  $\frac{\pi_x}{2}$ . (Art. 4.)

3. To find the value by the Thirty American Offices' Table and at 4 per cent. interest of a policy effected at age  $43\frac{9}{12}$ , the present age being  $62\frac{3}{12}$ :—

Here $1 + a_{43\frac{9}{12}} = 15.620$ and $1 + a_{62\frac{3}{12}} = 10.131$ , and we enter the Tables with the two values, 15.60 and 10.2, finding the policy-value by inspection to be	= 34.615
Add correction by proportional parts ( <i>see</i> Art. 28)	= .443
Policy-value from Tables . . . . .	35.058

NOTE.—By interpolation between the adjacent values in Table LXIII. of the *System and Tables of Life Insurance*, the value of a policy for 100 effected at age  $43\frac{9}{12}$  after  $18\frac{1}{2}$  years' duration, is found to be 35.1479. As the exact initial annuity-value is about midway between 15.60 and 15.65, the error is in this case nearly the greatest possible. The value must, as in the last example, be increased by the addition of  $\frac{\pi_x}{2}$ .

6.—The Tables may also very well be made use of for the purposes of a class valuation.

Thus let the following schedule contain the particulars of policies in existence at the date of a class valuation for

## YEAR OF BIRTH 1824.

H<sup>M</sup>.

Valuation on 31 December.

3½ per cent.

Average Valuation Age on 31 Dec. 1883, 59½ years.  
" " " 1888, 64½ "

No. of Policy.	Exact Age at Entry.	1 + Initial Annuity-value.	Sum Assured.	Policy-value, 1883. (1 + $a_{59\frac{1}{2}}$ = 11·008)	Policy-value, 1888. (1 + $a_{64\frac{1}{2}}$ = 9·304)
9,688	42½	16·311	400	129·864	171·680
9,754	43½	16·168	2,500	795·975	1059·750
9,782	43½	16·073	1,000	314·140	420·310
9,999	44½	15·732	300	90·324	122·781
10,353	45½	15·585	3,000	883·080	1210·770
10,790	47½	15·034	500	134·285	190·895
10,862	49	14·499	2,000	481·656	716·690
11,003	49½	14·291	400	92·084	139·748
12,779	52½	13·245	400	67·684	119·124
TOTALS			10,500	2989·092	4151·748

NOTE.—The initial annuity-values are taken to the nearest value given in the Tables, and the addition of half a year's premium income to the sum of the policy-values is necessary to arrive at the total liability.

The above are all the particulars that are required, and the initial annuity-values may be entered for permanent reference at the time the policy is taken out, according to the exact age at entry. At each successive valuation period one common terminal annuity-value for the average age attained may be taken as applicable to the whole of the policies, and the value of each policy may thus be written down very quickly by a simple reference to the Tables. The total value for the year of birth will be obtained by a summation of the column, and a succession of columns will enable the growing reserve of each policy to be recorded for each following valuation period. It is not claimed that this method will supersede those at present in use; indeed, it is open to the disadvantage that it does not show the values of the gross premiums and of the loading, but it will reduce the present labour of valuations very nearly to a mechanical process. It will, besides, afford a very easy means of making a check valuation, or of comparing the results of a valuation already made with those based upon some other mortality table or rate of interest.

7.—While the foregoing example is in theory strictly correct, it must be pointed out that it does not accord with the conditions of actual practice.

Class valuations are based on the formula

$${}_{n+\frac{t}{m}}V_x = A_{x+n+\frac{t}{m}} - \pi_x \left( \frac{t}{m} + a_{x+n+\frac{t}{m}} \right),$$



where the values of  $\Lambda$  and  $a$  are taken at the exact ages attained, but where the premium,  $\pi$ , instead of being taken at the exact age at entry, is taken at the office age at entry, which, according to English practice, is the age next birthday. In this way, as the premium valued is in excess of the pure premium for the age, the valuation understates the liability, and in some cases when a policy is valued for the first time, negative values may arise. This was first pointed out by Mr. J. J. W. Deuchar in his paper on Negative Policy-values (*J.I.A.*, Vol. XIX., p. 106).

In the foregoing example, inasmuch as the initial annuity-value has been taken for the exact age at entry, the true value of  $\pi_x$  has been used.

8.—The Tables may also be used for the valuation of joint-life, last survivor, and endowment assurance policies, as the valuation formula in all these cases assumes the same form as that for whole-life policies.

The following are the respective formulas:—

$$1.—\text{Joint-Life Policies, . . . . . } {}_nV_{xy} = 1 - \frac{1 + a_{x+n, y+n}}{1 + a_{xy}}$$

$$2.—\text{Last Survivor Policies, . . . . . } {}_nV_{\overline{xy}} = 1 - \frac{1 + a_{\overline{x+n, y+n}}}{1 + a_{\overline{xy}}}$$

If, in the case of these policies, one life has died, the formula becomes

$${}_nV_{\overline{xy}} = 1 - \frac{1 + a_{x+n}}{1 + a_{\overline{xy}}} \text{ or } 1 - \frac{1 + a_{y+n}}{1 + a_{\overline{xy}}}$$

$$3.—\text{Endowment Assurance Policies, } {}_nV_x = 1 - \frac{1 + {}_{t-n-1}a_{x+n}}{1 + {}_{t-1}a_x}$$

9.—On account of the large number of combinations of ages and durations it is not likely that complete tables of the values of special policies of the above kind will ever be published on any basis,\* and it may be worth while to show by an example the saving in labour that is effected by the use of the new Tables as compared with the actual working by the formula which would otherwise be necessary.

\* NOTE.—My friend Mr. Carment's recently published Tables give the values of endowment assurance policies payable at the ages of 50, 55, 60 and 65, or at death, according to the  $H^M$  mortality, with interest at 3, 3½, 4, and 4½ per cent.

Let it be required to find the value after 15 years' duration of a last survivor policy for 100 taken out on two lives, ages 35 and 25.

H<sup>M</sup> Mortality—Interest 3½ per cent.

1 + a<sub>35:25</sub> = 22·569      1 + a<sub>50:40</sub> = 19·006      1 + a<sub>40</sub> = 17·103

1. Both lives surviving at the end of 15 years.

*Value by Actual Working.*

22·569	19·006	(	·84213
	18·0552		·15787
	95080		100
	90276		<u>15·787</u>
	48040		
	45138		
	2902		
	2257		
	645		
	<u>677</u>		

*Value by reference to Tables.*

Entering the Tables with the two arguments  $1 + a_{35:25} = 22·55$  and  $1 + a_{50:40} = 19·0$ , we find by simple inspection the value . . . . . 15·743

Subtract correction for  
 ·006 (see Art. 28) . = ·027

Total value . . . . . = 15·716

2. The older life dead at the end of 15 years.

*Value by Actual Working.*

22·569	17·103	(	·75781
	15·7983		·24219
	1·30470		100
	1·12845		<u>24·219</u>
	176250		
	157983		
	18267		
	18055		
	212		
	<u>226</u>		

*Value by reference to Tables.*

Entering the Tables with the two arguments  $1 + a_{35:25} = 22·55$  and  $1 + a_{40} = 17·1$ , we find by inspection the value . . . . . 24·169

Subtract correction for  
 ·003 (see Art. 28) . = ·013

Total value . . . . . = 24·156

The errors of ·061 in the one case and ·063 in the other are both due to the Tables being entered with the initial annuity-value 22·55 instead of 22·569.

10.—In valuing special policies at a valuation period, when the values of the sum assured and of the premium are not required to be given separately, it is usual to take the mean value of each policy at the beginning and at the end of the

current year of risk, and the valuation formula for an endowment assurance policy, for example, will be derived as follows:—

$$\left. \begin{array}{l} \text{Value at beginning of current} \\ \text{year, premium just paid} \end{array} \right\} = 1 - \frac{1 + {}_{|\ell-n|}a_{x+n-1}}{1 + {}_{|\ell-1|}a_x} + \pi_{x|\ell}.$$

$$\left. \begin{array}{l} \text{Value at end of current year,} \\ \text{premium just due. . . . .} \end{array} \right\} = 1 - \frac{1 + {}_{|\ell-n-1|}a_{x+n}}{1 + {}_{|\ell-1|}a_x}.$$

$$\text{Mean value . . . . .} = 1 - \frac{1 + {}_{|\ell-n|}a_{x+n-1} + 1 + {}_{|\ell-n-1|}a_{x+n}}{2(1 + {}_{|\ell-1|}a_x)} + \frac{\pi_{x|\ell}}{2}.$$

This is rather a cumbrous and troublesome formula, and a much simpler mode of procedure may be adopted.

If we assume that the current policies are uniformly distributed over a year which begins 6 months before and ends 6 months after the date of valuation, so that the renewal dates fall in equal numbers on either side of the dividing line, we may make use of the unaltered formula  $1 - \frac{1 + {}_{|\ell-n-1|}a_{x+n}}{1 + {}_{|\ell-1|}a_x}$ , taking care only that the value given to  $n$  is the whole number less or greater than is indicated by the exact duration of the policy, according as the renewal date falls within the six months before or after the valuation date, and adding one half the current year's premium income.

In other words, one half of the policies are valued by the formula  $1 - \frac{1 + {}_{|\ell-n|}a_{x+n-1}}{1 + {}_{|\ell-1|}a_x} + \pi_{x|\ell}$ , and the other half by the formula  $1 - \frac{1 + {}_{|\ell-n-1|}a_{x+n}}{1 + {}_{|\ell-1|}a_x}$ .

When large numbers of policies are dealt with, and the amounts assured do not vary to any extraordinary degree, this is a mode of valuing special policies that may be legitimately adopted.

**11.**—It is stated in Art. 8 that the Tables are available for the valuation of a last survivor policy, even in the case of one of the lives having died, by a simple change in the terminal annuity-value that is used. In the same way, by taking the terminal annuity-value from the  $H^{M^{(5)}}$  Table, the value of a whole-life policy on a combined  $H^M$  and  $H^{M^{(5)}}$  valuation may be found according to the formula

$${}_nV_x = 1 - \frac{1 + a_{x+n}}{1 + a_x},$$

and, indeed, so long as the status of the assurance is not altered, either the terminal or the initial annuity-values may be taken to correspond, *so far as age*

or mortality is concerned, with any modification of the risk which, on valuation, may be thought necessary or desirable. If the rate of interest, however, be altered, the formula is no longer correct. This is apparent on considering the way in which it is developed. If we refer to Arts. 3 and 13 we shall find that any variation in the rate of interest will alter the final form in which the formula is expressed.

**12.**—It is now necessary to inquire how the value of a policy is affected when the premiums are payable otherwise than yearly.

Mr. Sprague gives the following neat demonstration in the *Journal of the Institute*, Vol. XXIII., pp. 264 and 265 :—

“ Assuming  $\pi_x$  to be the annual net premium valued, and the age at valuation to be  $x+n$ , then the value of a policy on which the premium is payable yearly is  $A_{x+n} - (1+a_{x+n})\pi_x$ . If the premium is payable half-yearly, the value will be  $A_{x+n} - (.75 + a_{x+n})\pi_x^{(2)}$ . The difference between these values is

$$\begin{aligned} (1+a_{x+n})\pi_x - (.75 + a_{x+n})\pi_x^{(2)} &= (1+a_{x+n})\pi_x - \frac{.75 + a_{x+n}}{.75 + a_x} (1+a_x)\pi_x \\ &= A_x \left( \frac{1+a_{x+n}}{1+a_x} - \frac{.75 + a_{x+n}}{.75 + a_x} \right) \\ &= \frac{A_x}{4} \cdot \frac{a_x - a_{x+n}}{(1+a_x)(.75 + a_x)} \\ &= \frac{1}{4} \pi_x^{(2)} \cdot {}_nV_x; \end{aligned}$$

“ that is to say, the reserve when the theoretical half-yearly premium is valued, is greater than the reserve when the yearly premium is valued, by a sum equal to the value of a policy for a half of one half-yearly premium. This result is obviously correct. In accepting half-yearly premiums we run the risk, as compared with the yearly payments, of losing the second half-yearly premium in the year of death; or, on the usual assumption of a uniform distribution of deaths, we lose one half-yearly premium in every other case; that is to say, on the average we lose half a half-year's premium in every case, and we require to have in hand a sufficient sum to compensate for this loss.”

Hence  ${}_nV_x^{(2)} = {}_nV_x \left( 1 + \frac{1}{4} \pi_x^{(2)} \right)$ , and in the same way it may be shown that

$${}_nV_x^{(4)} = {}_nV_x \left( 1 + \frac{3}{8} \pi_x^{(4)} \right), \quad \text{and}$$

$${}_nV_x^{(m)} = {}_nV_x \left( 1 + \frac{m-1}{2m} \pi_x^{(m)} \right)$$

$= {}_nV_x \left( 1 + \frac{1}{2} \pi_x^{(m)} \right)$  approximately, when  $m$  is a large number.



13.—Hitherto we have proceeded on the assumption that the sum assured is payable at the end of the year, or on the average 6 months after death, but as claims are now very generally payable either immediately or 3 months after death, it is desirable to inquire how this alteration in practice affects policy-values.

We have the single premium for an assurance payable 3 months after death  $= 1 - d^{(2)}(\cdot 75 + a_x)$ , and for an assurance payable at death  $= 1 - \delta a_x$  where  $d^{(2)}$  is the interest on 1, accumulating by half-yearly rests, in advance for a year, and  $\delta$  is the interest, accumulating momentarily, in advance on 1 for a year (*see* Art. 34).

Let  $'A$ ,  $'\pi$ ,  $d^{(2)}$ ,  $'V$ , and  $\bar{A}$ ,  $\bar{\pi}$ ,  $\delta$ ,  $V$ , represent the altered values of  $A$ ,  $\pi$ ,  $d$  and  $V$  when the sum assured is payable 3 months after death and at death respectively.

We shall then have

$$\begin{aligned} {}_n'V_x &= ('\pi_{x+n} - '\pi_x)(1 + a_{x+n}) \\ &= \left\{ \left( \frac{1}{1 + a_{x+n}} - d^{(2)} \frac{\cdot 75 + a_{x+n}}{1 + a_{x+n}} \right) - \left( \frac{1}{1 + a_x} - d^{(2)} \frac{\cdot 75 + a_x}{1 + a_x} \right) \right\} \times (1 + a_{x+n}) \\ &= 1 - \frac{1 + a_{x+n}}{1 + a_x} + d^{(2)} \left\{ \frac{\cdot 75 + a_x}{1 + a_x} (1 + a_{x+n}) - (\cdot 75 + a_{x+n}) \right\} \\ &= {}_nV_x + \frac{d^{(2)}}{4} \cdot \frac{a_x - a_{x+n}}{1 + a_x} = {}_nV_x \left( 1 + \frac{d^{(2)}}{4} \right). \end{aligned}$$

We see, therefore, that the difference between the reserve for a policy payable 6 months after death and the reserve for another policy payable 3 months after death is the value of a policy for one quarter of a year's interest, the reason being that, in the latter case, the risk is run every year of the sum assured becoming payable 3 months earlier than in the former case, and thus involving a loss of 3 months' interest.

It may also be shown in the same way and for a similar reason that

$${}_nV_x = {}_nV_x \left( 1 + \frac{\delta}{2} \right).$$

But we also have  ${}_n'V_x = '\Lambda_{x+n} - (1 + a_{x+n})'\pi_x$ , and  ${}_n'V_x^{(4)} = '\Lambda_{x+n} - (\cdot 625 + a_{x+n})'\pi_x^{(4)}$

$$\begin{aligned} \therefore {}_n'V_x^{(4)} - {}_n'V_x &= (1 + a_{x+n})'\pi_x - (\cdot 625 + a_{x+n})'\pi_x^{(4)} \\ &= (1 + a_{x+n})'\pi_x - \frac{\cdot 625 + a_{x+n}}{\cdot 625 + a_x} (1 + a_x)'\pi_x \\ &= '\Lambda_x \left( \frac{1 + a_{x+n}}{1 + a_x} - \frac{\cdot 625 + a_{x+n}}{\cdot 625 + a_x} \right) \\ &= \frac{3}{8} '\Lambda_x \frac{a_x - a_{x+n}}{(1 + a_x)(\cdot 625 + a_x)} = \frac{3}{8} '\pi_x^{(4)} \cdot {}_nV_x \end{aligned}$$

Hence

$${}_nV_x^{(4)} = {}_nV_x + \frac{3}{8} \cdot {}_n\pi_x^{(4)} \cdot {}_nV_x,$$

and if we substitute for  ${}_nV_x$  its equivalent  ${}_nV_x \left(1 + \frac{d^{(2)}}{4}\right)$  we have

$${}_nV_x^{(4)} = {}_nV_x \left(1 + \frac{3}{8} \pi_x^{(4)} + \frac{d^{(2)}}{4}\right).$$

It thus appears that the reserves for policies renewable oftener than once a year and payable at earlier dates than 6 months after death, may be stated in terms of the reserve for policies renewable by annual premiums and payable at the end of the year of death.

The subjoined Table gives a conspectus of the various reserves in terms of  ${}_nV_x$ , when the sum assured is payable 6 months after death, 3 months after death, or at death, and when the policies are renewable yearly, half-yearly, quarterly, or momentarily.

Premiums Payable	SUM ASSURED PAYABLE		
	6 Months after Death	3 Months after Death	At Death
Yearly . . .	${}_nV_x$	${}_nV_x = {}_nV_x \left(1 + \frac{d^{(2)}}{4}\right)$	${}_n\bar{V}_x = {}_nV_x \left(1 + \frac{\delta}{2}\right)$
Half-yearly .	${}_nV_x^{(2)} = {}_nV_x \left(1 + \frac{\pi_x^{(2)}}{4}\right)$	${}_nV_x^{(2)} = {}_nV_x \left(1 + \frac{{}_n\pi_x^{(2)} + d^{(2)}}{4}\right)$	${}_n\bar{V}_x^{(2)} = {}_nV_x \left(1 + \frac{\bar{\pi}_x^{(2)} + \delta}{2}\right)$
Quarterly . .	${}_nV_x^{(4)} = {}_nV_x \left(1 + \frac{3}{8} \pi_x^{(4)}\right)$	${}_nV_x^{(4)} = {}_nV_x \left(1 + \frac{3}{8} \pi_x^{(4)} + \frac{d^{(2)}}{4}\right)$	${}_n\bar{V}_x^{(4)} = {}_nV_x \left(1 + \frac{3}{8} \pi_x^{(4)} + \frac{\delta}{2}\right)$
Momently . .	${}_nV_x^{(m)} = {}_nV_x \left(1 + \frac{\pi_x^{(m)}}{2}\right)$	${}_nV_x^{(m)} = {}_nV_x \left(1 + \frac{{}_n\pi_x^{(m)} + d^{(2)}}{2} + \frac{d^{(2)}}{4}\right)$	${}_n\bar{V}_x^{(m)} = {}_nV_x \left(1 + \frac{\bar{\pi}_x^{(m)} + \delta}{2}\right)$

14.—It may be pointed out that while

$${}_nV_x = 1 - \frac{1 + a_{x+n}}{1 + a_x},$$

$${}_nV_x^{(2)} = 1 - \frac{\cdot 75 + a_{x+n}}{\cdot 75 + a_x}, \text{ and}$$

$${}_n\bar{V}_x^{(m)} = 1 - \frac{\cdot 5 + a_{x+n}}{\cdot 5 + a_x},$$

the formulæ in these three cases all assuming the same form.

Thus by adding 1,  $\frac{2}{3}$  or  $\frac{1}{2}$  to the initial and terminal annuity-values, we may enter the Tables with the respective arguments and find the policy-values in the following three cases:—

1. Premiums payable yearly, for an assurance payable 6 months after death.
2.        "            half-yearly,                "            3            "
3.        "            momently,                "            at death.

**15.**—Although the single premiums for a whole life and for an endowment assurance are based on the same argument, and although the valuation formulas for both kinds of assurance assume the same form, yet the result arrived at in Art. 12 does not apply to endowment assurances.

$$\begin{aligned} \text{We have } \quad A_x &= A_{x:n}^1 + A_{x:n}^{\frac{1}{2}} = \frac{M_x - M_{x+n}}{D_x} + \frac{D_{x+n}}{D_x} \\ &= A_{x:n}^1 = \frac{M_x}{D_x}, \text{ when } x+n = \text{the limiting age,} \end{aligned}$$

$$\begin{aligned} \text{and } \quad \pi_x &= \pi_{x:n}^1 + \pi_{x:n}^{\frac{1}{2}} \\ &= \pi_{x:n}^1, \text{ when } x+n = \text{the limiting age.} \end{aligned}$$

We see, therefore, that when  $x+n$  = the limiting age, the assurance values affected by the suffix  $x+n$  vanish, and  $\pi_x$  also =  $\pi_{x:n}^1$ . And as, in accepting half-yearly premiums, the risk run is that of the loss by death only during the currency of the policy of half a year's premium in every other case, the value of that loss at any particular epoch is, in the case of a whole-life policy, accurately represented by  ${}_nV_x \times \frac{\pi_x^{(2)}}{4}$ . But when we make the expiration of the term  $n$  fall within the limiting age, as in the case of endowment assurances, then the functions  $M_{x+n}$  and  $D_{x+n}$  are restored to vigour, and the value of the loss involved in accepting half-yearly premiums is represented by the first portion of the formula only. At any particular epoch this equals the then value of a temporary assurance, for the complete term, of one quarter's premium.

**16.**—As the values of life annuities and of annuities-certain are strictly analogous functions, an interesting side-light will be thrown on the nature of the value of a life policy if we ask what questions the Tables will answer when mortality is excluded and interest alone is taken into account.

It may easily be shown that the formula  $1 - \frac{1 + a_{x+n}}{1 + a_x}$ , which is based on the assumption of a series of payments at the beginning of each year, takes the form  $1 - \frac{a_{x+n}}{a_x}$  when annuities-certain are dealt with. Altering the suffixes in this last formula in conformity with the accepted notation of annuities-certain, we have  $1 - \frac{a_{\overline{n-t}}}{a_{\overline{n}}}$ , and, reasoning by analogy, we conclude that this formula gives us the value at the end of  $t$  years of a policy for 1, payable at the end of  $n$  years certain; or, in other words, it gives the amount to which a sinking fund payable at the end of each year, calculated to provide 1 at the end of  $n$  years, has accumulated at the end of  $t$  years. Hence, the value of a life policy is the result of the accumulation of a sinking fund. In the case of a life policy the sinking fund is the difference between the whole-life premium and the term premium for the number of years at the end of which the value of the policy is wanted, and this difference accumulated, both at mortality and interest, gives the life policy-value.

*Example*:—If a Sinking Fund of 2·401, payable at the end of the year, have been set apart to provide 100 at the end of 25 years at 4 per cent. interest, to what amount will it have accumulated at the end of 15 years?

Here we have  $a_{\overline{25}} = 15·622$  and  $a_{\overline{25-15}} = 8·111$ . Entering the Tables with the two values 15·6 and 8·111, we find the policy-value to be 48·007. This value, however, leaves out of account the figures ·022 in the initial annuity-value. We therefore interpolate for these between the values opposite to 8·1 under the columns 15·65 and 15·60, and we find that an addition of ·074 must be made, making the total policy-value 48·081. If this sum be subtracted from 100, the difference, 51·919, will be the amount of capital remaining to be paid at the end of 15 years of a loan granted for a term of 25 years, and repayable by equal annual instalments of principal and interest at 4 per cent. during that time.

The foregoing illustration is given more as a matter of interest than of practical utility. In financial transactions involving large sums of money very great exactitude is requisite, and three places of decimals are not sufficient. The case is different with life policies, which do not often exceed in amount a few thousand pounds, and which depend to a large extent on the rate of mortality—not an absolutely fixed quantity.

17.—The formula  $1 - \frac{1 + a_{x+n}}{1 + a_x}$  is, however, perfectly general in its application, and it may be written  $1 - \frac{A}{B}$ , where  $A < B$ . The results yielded by it are



simply the differences between unity and any given fraction. Hence the Tables may be used to find the values of any function that can be thrown into that form.

The most important of these connected with life assurance is the expression  $1 - \frac{\pi_x}{\pi_{x+n}}$  for finding the amount of a paid-up policy, and the Tables have been somewhat extended beyond the original design so that they might afford a ready answer to this question for all values of  $\pi_x$  and  $\pi_{x+n}$  most likely to be required.

This formula may be applied in the case of

1. Whole Life Policies, whether the premiums are payable for the whole of life or for a limited period only.
2. Endowment Assurances, ditto
3. Joint Life Assurances, ditto
4. Last Survivor Assurances, ditto
5. Temporary Assurances, ditto

Care must be taken that the proper value is given to  $\pi_{x+n}$ . If  $\pi_x$  be the premium for a benefit on any status at the original entry-age, then  $\pi_{x+n}$  must be taken as the premium at the attained age for the same benefit, and the premiums also must be such either that they shall both continue during the whole existence of the status or that they shall both terminate at the same epoch.

The use of this formula has been very fully discussed in the *Journal of the Institute of Actuaries*, by Mr. J. R. Macfadyen (vol. xv, p. 297), and also by Mr. Sprague (vol. vii, p. 58).

18.—The following are a few examples of other formulas which assume the form  $1 - \frac{A}{B}$ , where A is less than B, and in these cases too the Tables will furnish the values of the different expressions, although in most cases probably not very conveniently, on account of the limits within which it has been found necessary to confine the values in the Tables.

$$1 - \frac{1 - \Lambda_{x+n}}{1 - \Lambda_x} = 1 - \frac{\pi_x + d}{\pi_{x+n} + d} = 1 - \frac{1 - {}_mV_x}{1 - {}_{m+n}V_{x+n}} = {}_nV_x = \text{Policy-value}$$

$$1 - \frac{1 - \Lambda_x - \Lambda_y}{1 - \Lambda_y} = 1 - \frac{1 - a_x + a_x + a_y}{1 + a_y} = \left\{ \begin{array}{l} \text{Present value of fines in perpetuity} \\ \text{payable on failure of successive} \\ \text{lives (y) all of the same age.} \end{array} \right.$$

$$1 - \frac{1 - 2\Lambda_x}{1 - \Lambda_x} = 1 - \frac{1 - a_x + 2a_x}{1 + a_x} = \left\{ \begin{array}{l} \text{Single premium for a whole-life as-} \\ \text{surance on } x, \text{ with a return of the} \\ \text{premium paid.} \end{array} \right.$$

$$1 - \frac{1 - a_x + 2a_x + 1a_x}{1 + a_x + 1a_x} = \left\{ \begin{array}{l} \text{Annual premium for the same, with a return of all the} \\ \text{premiums paid.} \end{array} \right.$$

$$1 - \frac{1 + a_{x+n}^*}{1 + a_x} = 1 - d(1 + a_{x+n}) = \Lambda_{x+n} = \left\{ \begin{array}{l} \text{Single premium for a whole-life} \\ \text{assurance on } x+n. \end{array} \right.$$

$$\left(1 - \frac{1 + a_{x+n}}{1 + a_x}\right) \div \left(1 - \frac{\pi_x}{\pi_{x+n}}\right)^\dagger = \Lambda_{x+n} = \text{ditto}$$

$$1 - \frac{1 + a_x - 2a_{y|x}}{1 + a_x - a_{y|x}} = 1 - \frac{1 - a_x + 2a_{xy}}{1 + a_{xy}} = \left\{ \begin{array}{l} \text{Annual premium for a reversionary} \\ \text{annuity on } x \text{ after } y. \end{array} \right.$$

$$1 - \frac{1 + a_x - 2a_{n|x}}{1 + a_x - a_{n|x}} = 1 - \frac{1 - a_x + 2a_{x:n}}{1 + a_{x:n}} = \left\{ \begin{array}{l} \text{Annual premium in } n+1 \text{ payments for} \\ \text{an annuity on } x \text{ deferred } n \text{ years.} \end{array} \right.$$

$$1 - \frac{l_{x+1}}{l_x} = q_x$$

$$1 - \frac{d_x}{l_x} = p_x$$

&c., &c.

&c., &c.

\* NOTE.—This formula for the single premium for an assurance shows the complete analogy between the forms of the expression for the value of a reversion and the value of a policy. It is apparent that  $\Lambda_{x+n}$  may be looked upon as the upper limit of the expression  ${}_nV_x$ . If the Tables had been extended to give the values of  $1 - \frac{\Lambda}{B}$  for all values of  $\Lambda$  from 34 downwards they would have enabled us to find the value of  $\Lambda_x$  corresponding to any annuity-value and to any rate of interest from 3 per cent. upwards.

† This form is interesting as it shows, in its two component parts, the double use of the Tables.

19.—A little consideration of the formula  $\frac{\Delta a}{1+a}$  will lead to the conclusion that the assembled results for any variations in  $a$  and  $\Delta a$  that are required may be represented by a solid. If we suppose the value of the denominator  $1+a$  to run from 25.00, by decrements of .1, down to 1.00, we may set apart, along the line  $AD$  in the annexed diagram, positions at equal distances for successive rows of perpendiculars parallel to  $AC$ , and representing the values of the fraction  $\frac{\Delta a}{1+a}$  corresponding to each successive value of  $1+a$ . Thus the first row of perpendiculars would be set along the line  $AC$ , and if we assume that the value of the numerator  $\Delta a$  runs from 0 to 24



by increments of .1, the value  $\frac{0}{25}$  would be placed at the point  $A$  and the value  $\frac{24}{25}$  at the point  $C$ , while the intervening values would occupy the intermediate positions. In the same way the succession of values appertaining to the next denominator 24.9 would be set in the following row, and so on.

In the Frontispiece is given an engraving of a model constructed on the foregoing data but with the vertical scale exaggerated 10 times; the model itself will thus represent the sum of all possible values of policies for 10. The figures set along the side  $AD$  at equal distances apart are the values of  $1+a$  at the respective positions, and those set along the line  $AC$  are the successive amounts of fall in the annuity-values, while the perpendiculars erected at the points of intersection of the two sets of lines starting at right angles from the points of origin in the two lines  $AD$  and  $AC$  respectively, represent the policy-values. The figure  $aa'd'd'$  in the side  $ABC$  shows the space occupied by the block representing the sum of the values of a mass of policies which are taken out at all intervals of age between the ages corresponding to annuity-values  $1+a=25$  and  $1+a=24$  according to any table of mortality and which are of the durations indicated by all possible falls in the annuity-values between a fall of 6 and a fall of 7.

The author would refer for fuller details on this subject to a paper read by him before the Institute of Actuaries in January, 1885, "On the Construction of

Models of Policy-values, and on a new method of comparing the Reserves for Policies according to different Tables of Mortality and Rates of Interest."

**20.**—If such a model were constructed and if each individual value were represented by a separate perpendicular in wood or metal, that could be removed and replaced at will, it is evident that it would be, as it were, a storehouse model, from which the materials for building up other models of reserves, based on any Table of mortality or rate of interest, might be drawn. To build up a model, say for the  $H^M$  mortality at 3 per cent. interest, it would first of all be necessary to select, along the line  $AD$ , the rows of perpendiculars having for their denominators the values nearest to those of the successive functions,  $1+a_x$ ,  $1+a_{x+1}$ , &c., on that basis. Then, in each row, those values only should be selected which correspond to the successive falls, according to the selected Table, in the value of the original annuity. Thus there would gradually be built up a model of the reserves of policies for all ages at entry and all durations (in yearly intervals of age and duration) by that particular Table and rate of interest.

**21.**—A section across this last model in the direction indicated by the line  $ef$  might then be made at a point corresponding to any particular age at entry, and the area of that section would represent the sum of the values of policies of every possible duration at the common entry age; that is, it would represent diagrammatically  $\sum_n V_x$ .

The three diagrams in the body of the work represent sections taken on this plan for ages at entry, 25, 35 and 45, and the different lines running across the diagrams represent the upper limits of the section according to the following bases respectively:—

Carlisle . . . . .	3 per cent.
$H^M$ . . . . .	$3\frac{1}{2}$ „
$H^M$ and $H^{M(5)}$ . . . . .	4 „
17 Offices . . . . .	4 „
American Experience . . . . .	$4\frac{1}{2}$ „

It has not been thought worth while to continue the sections beyond age 95, as, owing to the paucity of observations, the idiosyncrasies of the various tables of mortality are of no practical importance after that age. The heavy line running across the diagrams at some distance above the others shows pictorially the reserve made for policies on the following rated-up lives when the valuations are made at the rated-up ages:—

25 years of age, rated-up 10 years.	
35 „ „ 10 „	
45 „ „ 5 „	

22—These diagrams suggest a new method of comparing the reserves brought out according to different bases of mortality and interest.

It is evident that if the function  $\sum_n V_x$  were made the foundation of such a comparison it would lead to no useful result, for the weakness of the reserve at one part of a curve might be exactly balanced by a corresponding increase of strength at another part, and, the total  $\sum_n V_x$  only being given, it would not be possible to make any correction for a different weight of observations at the respective deflections.

But if the function  ${}_n V_x$  were summed for successive periods of duration of 5 years at selected ages of entry, the results would afford a very useful means of comparing the relative strength of different bases of valuation reserves.

23.—I have therefore published in a set of subsidiary Tables, which immediately follow this Introduction, the values of  $\sum_{n+5} V_x$  on the following bases, for ages at entry 20, 25, 30, 35, 40, 45, 50, 55 and 60, and durations in successive periods of 0-5, 5-10, &c., years, from the age at entry up to age 95, as a common limiting age:—

Carlisle . . . . .	3, 3½ and 4 per cent.
Davies's Equitable . . . . .	” ”
Seventeen Offices . . . . .	” ”
English Life, No. 3, Males . . . . .	” ”
Institute of Actuaries, H <sup>M</sup> . . . . .	” ”
” ” H <sup>M</sup> and H <sup>M(5)</sup> * . . . . .	” ”
American Experience . . . . .	3, 3½, 4 and 4½ per cent.
Thirty American Offices . . . . .	” ”

These values have been calculated by the formula

$$\sum_{n+5} V_x = \left(1 - \frac{a_{x+n} + a_{x+n+5}}{2a_x}\right) \times 100,000.$$

and the annuity-values used have been taken in all cases to 3 decimal places, so as to secure the same degree of accuracy in all the results. It has been assumed that over any one period of 5 years the successive policy-values at equal intervals increase in arithmetical progression. This assumption will be found to be very near the truth in most Tables presenting a regular graduation, especially at those periods of age and duration where the weight of the observations falls heaviest. The above formula also assumes that there are 100,000 policies for 1 each in force during each period, and that these have been issued at the end of 100,000 equal intervals of time during the first period.

\* The result of the formula for the first 5 years by this table has been filled in for the sake of uniformity.



The total of each column of results will give the liability under risks amounting to as many times 100,000 as there are periods of 5 years between the entry-age and age 95. Thus at age 25 by the Carlisle Table and 3 per-cent interest, the total 635,879 is the liability under risks amounting to  $100,000 \times \frac{70}{5} = 1,400,000$

**24.**—A further use of these subsidiary Tables may consist in their application to purposes of valuation, and they may be especially useful in estimating the increased reserves that are necessary in passing from one basis of valuation to another.

They are constructed on the foundation of a large number of policies effected at successive small intervals of time, and this is a theoretical condition which accords more or less with actual practice. It will also be found that under the conditions mentioned in the last article,  ${}_1V_{x-1} + {}_1V_{x+1} = {}_1V_{x-2} + {}_1V_{x+2} = {}_1V_x \times 2$  nearly. The age  $x$  may therefore be taken as the central one of the 5 consecutive ages  $x-2$ ,  $x-1$ ,  $x$ ,  $x+1$  and  $x+2$ , and the sums assured actually under observation may be grouped in the form

Durations of Policies.	AGES AT ENTRY.			
	18-22	23-27	28-32	&c.
Years				
0-5				
5-10				
10-15				
&c.				

**25.**—In order to make a valuation on this plan reasonably accurate, it would be necessary (1) either that the business should be stationary in character, or that some allowance should be made to compensate for a larger mass of observations at the beginning of each quinquennial period; (2) that the central age in each group of observations should be the average age attained at the date of valuation by all the lives in the group.

This second condition may be provided for very simply if the facts be recorded on cards, and then be arranged according to years of birth, which run six months on either side of the date of valuation. Thus, if the valuation date be 31 Dec., the entrants should be recorded as born in successive calendar years between each 1 July and 30 June. It should be remembered also, that a valuation by the foregoing method assumes the pure premiums valued to be those for the exact fractional age at entry.

26.—The principal Tables give, by simple inspection, policy-values corresponding to all initial annuity-values, commencing at 22·95 and descending by intervals of ·05 to 1, and to all terminal annuity-values, commencing at 22·9 and descending by intervals of ·1 to 0. In the latter part of the Tables, which is more likely to be used to find the amounts of paid-up policies, the terminal annuity-value  $1+a_{x+n}$ , or rather the corresponding function,  $\pi_x$ , has been given for intervals of ·05 instead of ·1 between consecutive values. And by this means, for rates per cent. of premium to the nearest shilling and within the limits usually observed in practice, the amount of paid-up policy that can be granted in lieu of a whole-life policy may be obtained by inspection.

27.—In using the Tables it is intended that the initial annuity-value should, in all cases, be taken to the nearest value tabulated.

The greatest possible error which can result from doing so will vary between ·104 and ·459 in the value of a policy for 100; and the latter amount of error will only occur in the case of a policy that has been effected at a net premium as high as 15·436 per cent. For all policies effected at net rates of premium not greater than 5 per cent., which will include the great bulk of policies issued, the limit of error will not exceed ·200. The greatest error will occur just after a policy has been effected. As the duration increases the error diminishes, and at last almost disappears. It will, therefore, be found to give a sufficiently close result for all practical purposes if the initial annuity-value, with unity added, be taken to the nearest value tabulated.

28.—The Tables of proportional parts are applicable to the terminal annuity-value only.

The proportional parts set down under each vertical column of policy-values apply to the whole of the values in the respective columns on both pages. As printed, they give the correction for the corresponding significant figure in the second place of decimals. Thus, if the initial annuity-value, with unity added, be 15·95, and the correction be wanted for the figures ·085 in the terminal annuity-value, the 1st column of proportional parts must be referred to, and the correction is found as follows:—

Proportional parts.

·01	·063
·02	·125
·03	·188
·04	·251
·05	·313
·06	·376
·07	·439
·08	·502
·09	·564

Correction for ·08	=	·502
Do.           ·005	=	·031
Total correction	=	<u>·533</u>

As the policy-value is proportional to the fall in the annuity-value, it follows that if the Tables be entered with unity plus a terminal annuity-value *less* than the correct one, that is to say, if the fall in the annuity-value be taken in defect, the policy-value so found will be too great, and the correction by proportional parts will necessarily be subtractive. But the inconvenience of having both additions and subtractions to make in the course of one operation may easily be obviated by taking the terminal annuity-value *greater* than the correct one, and adding to the resulting policy-value a correction found by the Table of proportional parts for the complement of the figures not taken account of.

Thus, in finding the policy-value in the example on p. 3, the Tables may be entered with the terminal argument 11·1, and the correction by proportional parts for the figures ·080 be *subtracted*, or they may be entered with the terminal argument 11·2, and the correction be *added* for the figures ·020. In either case, the result is the same as shown below.

*Arguments 16·00 and 11·2.*

Policy-value as found from Tables . . . . .	30·000
As the exact terminal annuity-value is 11·180, the argument 11·2 is <i>in excess</i> by the figures ·020, and the corresponding correction by proportional parts must be <i>added</i> . . .	·125
Total policy-value . . . . .	<u>30·125</u>

*Arguments 16·00 and 11·1.*

Policy-value as found from Tables . . . . .	30·625
In this case, the argument 11·1 is <i>in defect</i> by the figures ·080, and the corresponding correction by proportional parts must be <i>subtracted</i> . . . . .	·500
Total policy-value . . . . .	<u>30·125</u>

The trouble is, however, necessarily considerable in making use of tables of proportional parts to find exact values corresponding to a change of more than one figure, and if for any particular terminal annuity-value the mean of the policy-values obtained by entering the table with unity plus each of the two nearest annuity-values be taken, the error will, in most cases, be unimportant.

29.—The mode of formation of the principal Tables is of the most simple character, and furnishes another instance of the great utility of the machine invented by M. Thomas (de Colmar).

The working formula was  $V = \frac{\Delta a}{1+a}$ .

The first step was to place the reciprocal of the denominator on the face of the machine, and as the tables record the results of successive falls in the annuity-value of .1, .2, .3, &c., one turn after another of the handle of the machine gave each required result in succession, and these were carefully recorded. It was found that this could be done so accurately that it was determined to set up the type from these values as first calculated. The values were then recalculated by another machine, and the results were read off direct from the machine with the proof sheets. In this way the number of processes through which the calculations passed before being printed was reduced to a minimum, and a check was put upon the accuracy of the calculations at the last stage before the impression was struck off. But as the simplicity of any process throws upon a computer the duty of taking always more stringent care for the production of accurate results, I resolved to subject the calculations to a further revision after the work had left the printer's hands. This resulted in the discovery of four errors, three of calculation and one of the press, and these are given on the last page of the Tables. They are all unimportant, and affect only the third place of decimals.

**30.**—The reciprocals were all taken to 7 places of decimals from Col. Oakes's Table of Reciprocals. The general accuracy of the results was also tested by tracing the even progression of final values produced by each reciprocal, and occasionally a final value was verified by the formula

$$(w_{-1-x}V_x + \pi) \times (1+i) = 1 = \text{the sum assured,}$$

the rate of interest  $i$  being chosen at random.

**31.**—The third revision to which the Tables were subjected was effected partly by means of direct calculation on the machine, and partly by a comparison of the results in one part of the Table with those in another. It is evident from a consideration of the nature of the formula that if the Tables be sufficiently extended the same results will often recur; for  $1 - \frac{A}{B} = 1 - \frac{nA}{nB}$ .

This comparison disclosed a number of differences (about 50 altogether in the part of the Tables that were checked in this way) of a unit in the last place of decimals between the results in two or three different parts of the Tables. These differences were investigated in every case, and were found to arise from the slight inaccuracies that necessarily existed in the contraction of the reciprocals. The variation of error in the reciprocals of a number and one of the multiples of the number sometimes happened to be the greatest possible, and in these cases



the multiplication of the divergent inaccuracies occasionally affected the results to the extent indicated. The following is an example of the differences in the results found to arise from this cause.

$1 + a_x$		$1 + a_{x+n}$		${}_nV_x$
18.80	.	8.8	.	53.191
9.40	.	4.4	.	53.192
4.70	.	2.2	.	53.192
2.35	.	1.1	.	53.191

32.—The tables of the values of  $\sum_n^{n+5} V_x$  were also formed on the machine, the working formula being that given in Art. 23. The accuracy of the calculations was checked by casting each column of values and comparing the total with the result of a direct calculation by the formula

$$\left( N - \frac{a_x + a_{x+n} + 2(a_{x+5} + a_{x+10} + \dots + a_{x+n-5})}{2a_x} \right) \times 100,000,$$

where N is the number of separate values in each total.

The agreement of the results was remarkably close. The following is a statement of the differences, and it will be seen that only in one instance was the difference as much as 4 in the units place.

Amount of Difference } —4	—3	—2	—1	0	+1	+2	+3	+4
Number of times repeated } 0	2	16	59	93	45	24	3	1

33.—In order to facilitate reference, the annuity-values by a number of the best-known tables of mortality have been brought together and printed. They will be found immediately before the principal tables. There also appear along with them the annuity-values and the values of the functions  $\pi_{[i]}$  and  $A_{[i]}$  at 3, 3½ and 4 per-cent interest, derived by Mr. Sprague from his *Select-Life Tables*.

The following extract from a paper read by Mr. Sprague before the Institute of Actuaries, “On the Construction and Use of a Series of Select Mortality Tables to be employed in combination with the Institute H<sup>M</sup>(<sup>6</sup>) Table,” will explain some of the purposes which these last values will serve:—

“On the assumption that the first year’s premiums are absorbed by the first year’s risk and the initial expenses, the proper net premium to value is  $\omega_{[x+1]}$ ; and then, if the expenses in future years are approximately constant, we must value the same net premium for policies of all durations, and we have the formulas

$${}_nV_x = A_{[x]+n} - a_{[x]+n} \cdot \omega_{[x+1]} = a_{[x]+n} (\omega_{[x]+n} - \omega_{[x+1]}) = 1 - \frac{a_{[x]+n}}{a_{[x+1]}}; \quad [\text{Col. 8}]$$

$${}_n(hV)_x = A_{[x+n]} - a_{[x+n]} \cdot \omega_{[x+1]} = a_{[x+n]} (\omega_{[x+n]} - \omega_{[x+1]}) = 1 - \frac{a_{[x+n]}}{a_{[x+1]}}. \quad [\text{Col. 9}]$$



“ The values in columns (8) and (9) of the table of policy-values\* are calculated by these formulas; and these are the values which, in my opinion, may most advantageously be used in life office calculations. The values in column (8) are suitable for calculating policy-values in the quinquennial or other periodical investigations, and a table of them might be formed and used in the same way as the well-known tables of policy-values which are in use in a good many offices. The values in column (9) are useful for calculating surrender-values, but must not be employed without some further adjustment. They represent the sum that the company should have in hand to meet its liability under a policy, on the suppositions that the first year's premium is wholly absorbed by the first year's risk and expenses, and that the life is still in good health. It is therefore clear that an office cannot afford to give for the surrender of the policy a larger sum than shown by these values; but it may very properly give a smaller value.” (*J.I.A.*, Vol. XXII, p. 419.)

\* The reference here is to a table in Mr. Sprague's paper.

34.—The following is a key to the notation employed in this volume. The symbols relating to select lives are adopted from Mr. Sprague:—

$i$  = interest on 1 for one year.

$v = \frac{1}{1+i}$  = the value of 1 due a year hence.

$d$  = discount on 1 for one year when the effective rate of interest is  $i$ .

$d^{(2)}$  = effective rate of discount for one year when the discount is convertible half-yearly and the nominal yearly rate is  $d$ . †

$\delta = \log_e (1+i)$  = the force of discount.

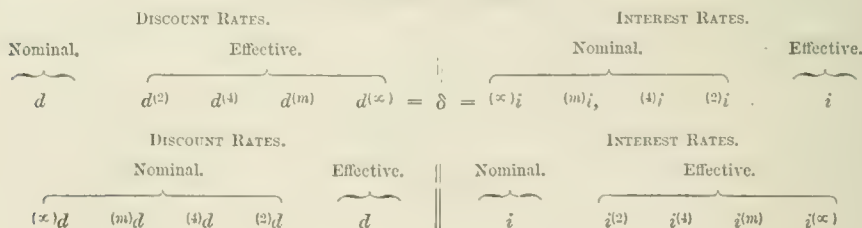
= the nominal yearly rate of interest when interest is convertible momentarily and the effective rate of interest is  $i$ , or the effective rate of discount when discount is convertible momentarily and the nominal yearly rate is  $d$ .

$a_{\overline{n}|}$  = present value of an annuity-certain of 1 for  $n$  years.

$a_{\infty}$  = present value of a perpetuity of 1.

† An expression is often wanted for the nominal annual rate of interest, convertible  $m$  times a year corresponding to the effective rate  $i$  and *vice versa*. The following is suggested as a complete scheme of notation.

PROPOSED SYMBOLS.



$a_x, a_{[x]}$  = present value of an annuity of 1 due at the end of every year through which  $x$  or  $[x]$  shall live.

$a_{x\overline{n}}$  = present value of a temporary annuity of 1 for the next  $n$  years if  $x$  shall live so long.

$a_{\overline{n}|x}$  = present value of an annuity of 1 on  $x$  deferred  $n$  years.

$Ia_x$  = present value of an increasing annuity the first payment and the subsequent yearly increase both being 1.

If the annuity is payable in advance it is called an annuity-due, and is denoted by the symbol  $\ddot{a}_x$ .

$P_x$  or  $\pi_x$  = annual premium for an assurance of 1 on  $x$ .

$\pi_x^{(2)}, \pi_x^{(4)}, \pi_x^{(m)}$  = total yearly payment when the premium is payable half-yearly, quarterly, or  $m$ th yearly.

$\pi_{x\overline{n}}^1$  = annual premium for a temporary assurance of 1 for  $n$  years on  $x$ .

$\pi_{x\overline{n}}^{\frac{1}{2}}$  = ,, ,, for an endowment of 1 on  $x$  payable in  $n$  years.

$\pi_{x\overline{n}}$  = ,, ,, for an endowment assurance of 1 payable on the death of  $x$  or at age  $x+n$ .

$A_x$  = present value of an assurance of 1 payable at the end of the year in which  $x$  shall die.

$A_{x\overline{n}}^1$  = value of 1 payable on the death of  $x$  provided that take place before the end of  $n$  years.

$A_{x:y(\overline{n})}^1$  = value of 1 payable on the death of  $x$  provided that take place before the death of  $y$  or within  $n$  years after the death of  $y$ .

$A_{x\overline{n}}^{\frac{1}{2}}$  = value of 1 payable at the end of  $n$  years provided  $x$  be then alive.

${}_nV_x$  = value of a policy for 1, effected at age  $x$ , after it has been  $n$  years in force, the  $n$ th premium being just due and unpaid.

${}_nV_x^{(2)}, {}_nV_x^{(4)}, {}_nV_x^{(m)}$  = do., do., when premiums are payable half-yearly, quarterly, or  $m$ th yearly.

The subscripts  $[x], [x+1] \dots [x+n]$ , &c., denote that the symbols to which they are attached, relate to lives which are respectively of the ages  $x, x+1, \dots x+n$ , &c., and are select (or healthy) lives.

The subscript  $[x]+n$  denotes that the lives to which the symbol relates are of the age  $x+n$ , and were select at the age  $x$ .

The subscripts  $[x-1]+1, [x-2]+2, \dots [x-t]+t$  denote that the lives are now of the age  $x$ , and were select at the ages  $x-1, x-2, \dots x-t$ , respectively.

The symbol  ${}_n(hV)_x$  or  ${}_n(hV)_{[x]}$  denote that the lives on which the policies were effected are still select (or healthy) lives. [This might also be denoted by the symbol  ${}_{[n]}V_{[x]}$ .]

NOTE ON THE ANALOGY BETWEEN THE BENEFITS SECURED BY ANNUITIES-CERTAIN  
AND BY LIFE ANNUITIES.

The Sinking Fund to reproduce Capital at the end of a fixed term, and the Premium for a Life Assurance, can be deduced by an exactly similar process of reasoning.

1.—*Annuities-Certain.*

$a_{\bar{n}}$  = Value of an annuity of 1 payable at end of each year for  $n$  years.

$\frac{1}{a_{\bar{n}}}$  = Annuity payable as above that 1 will purchase, or the annual sum that will pay off a loan of 1 with interest within the given term.

This annual sum is made up of two parts (see *Institute of Actuaries' Text-Book*, Part I., p. 31), and

$\frac{1}{a_{\bar{n}}} = P_{\bar{n}} + i$ , where  $P_{\bar{n}}$  is the Sinking Fund to reproduce the Capital, and  $i$  is the interest on the loan.

If the loan be forborne, no interest will fall to be paid, and we have therefore

$$\frac{1}{a_{\bar{n}}} - i = P_{\bar{n}} = \text{Sinking Fund to reproduce Capital.}$$

2.—*Life Annuities.*

$1 + a_x$  = Value of an annuity of 1 payable at beginning of each year of life entered on.

$\frac{1}{1 + a_x}$  = Annuity payable as above that 1 will purchase, or the annual sum that will pay off a loan of 1 with interest and mortality.

This annual sum is also made up of two parts, and

$\frac{1}{1 + a_x} = P_x + d$ , where  $P_x$  is the annual premium required to provide the Capital at death, and  $d$  is the interest on the loan payable in advance.

If the loan be forborne, no interest will fall to be paid, and we have therefore

$$\frac{1}{1 + a_x} - d = P_x = \text{Annual Premium for an Assurance of 1 at death.}$$

But  $P_x$  is itself made up of two parts,  $P_{x\overline{n}}^1$ , the premium to provide the Capital if death occur within  $n$  years, and  $P_{x\overline{n}}^{\frac{1}{2}}$ , the premium required to accumulate towards payment of the Capital if death should not occur within  $n$  years. Hence the Sinking Fund in the case of a Life Assurance is

$$\frac{1}{1+a_x} - d - P_{x\overline{n}}^1 = P_{x\overline{n}}^{\frac{1}{2}}.$$

If  $n$  be taken for a term of years that would carry the life up to the limiting age in the Table of Mortality employed, then  $P_{x\overline{n}}^1 = P_x$ , and  $P_{x\overline{n}}^{\frac{1}{2}}$  vanishes.

#### VALUES OF THE TWO BENEFITS.

The value may be based, either on the value of the increase in Premium or Sinking-Fund required to produce the same benefit after a given number of years has elapsed, or on the accumulation of the Sinking Fund for the given number of years.

##### 1.—Value of difference in Sinking Fund—Annuities-Certain.

$$P_{\overline{n}} = \frac{1}{a_{\overline{n}}} - i, \quad P_{\overline{n-t}} = \frac{1}{a_{\overline{n-t}}} - i, \quad \text{and}$$

$$tV_{\overline{n}} = (P_{\overline{n-t}} - P_{\overline{n}}) \times a_{\overline{n-t}} = \left( \frac{1}{a_{\overline{n-t}}} - \frac{1}{a_{\overline{n}}} \right) \times a_{\overline{n-t}} = 1 - \frac{a_{\overline{n-t}}}{a_{\overline{n}}}.$$

##### 2.—Value of difference in Premium—Life Assurances.

$$P_x = \frac{1}{1+a_x} - d, \quad P_{x+n} = \frac{1}{1+a_{x+n}} - d, \quad \text{and}$$

$${}_nV_x = (P_{x+n} - P_x) \times (1+a_{x+n}) = \left( \frac{1}{1+a_{x+n}} - \frac{1}{1+a_x} \right) \times (1+a_{x+n}) = 1 - \frac{1+a_{x+n}}{1+a_x}.$$

It is interesting to note, that the value is the same whether the benefit be purchased by a premium payable at the beginning or at the end of each year of life entered on.

In the latter case, when a life policy is in question,

$$P_x = \frac{1}{v(1+a_x)} - i, \quad P_{x+n} = \frac{1}{v(1+a_{x+n})} - i, \quad \text{and}$$

$${}_nV_x = (P_{x+n} - P_x) \times v(1+a_{x+n}) = \left( \frac{1}{v(1+a_{x+n})} - \frac{1}{v(1+a_x)} \right) \times v(1+a_{x+n}) = 1 - \frac{1+a_{x+n}}{1+a_x}.$$

In the same way it may be shown, in the case of Annuities-certain, that

$$\begin{aligned} {}_tV_{\bar{i}} &= (P_{\bar{i}-t} - P_{\bar{i}}) \times v(1 + a_{\bar{n}-t-1}) = \left( \frac{1}{v(1+i)^{n-t-1}} - \frac{1}{v(1+i)^{n-1}} \right) \times v(1 + a_{\bar{n}-t-1}) \\ &= 1 - \frac{1 + a_{\bar{n}-t-1}}{1 + a_{\bar{n}-1}}. \end{aligned}$$

### 3.—Accumulation of Sinking Fund—Annuities-Certain.

$$\begin{aligned} P_{\bar{n}} &= \frac{1}{a_{\bar{n}}} - i, \quad \text{and} \quad {}_tV_{\bar{n}} = \left( \frac{1}{a_{\bar{n}}} - i \right) \times \frac{(1+i)^t - 1}{i} = \left( \frac{1}{\frac{1-(1+i)^{-n}}{i}} - i \right) \times \frac{(1+i)^t - 1}{i} \\ &= \left( \frac{i}{1-(1+i)^{-n}} - i \right) \times \frac{(1+i)^t - 1}{i} = \frac{i(1+i)^{-n}}{1-(1+i)^{-n}} \times \frac{(1+i)^t - 1}{i} \\ &= \frac{(1+i)^t - 1 - (1+i)^{-n}}{1-(1+i)^{-n}}. \end{aligned}$$

When  $t=n$ ,  ${}_tV_{\bar{n}} = \frac{1-(1+i)^{-n}}{1-(1+i)^{-n}} = 1 = \text{the Sum secured.}$

### 4.—Accumulation of Sinking Fund—Life Assurances.

$$\begin{aligned} P_{x\bar{n}}^1 &= P_x - P_{x\bar{n}}^1, \quad \text{and} \quad {}_nV_x = (P_x - P_{x\bar{n}}^1) \frac{1 + a_{x, \bar{n}-1}}{n p_x \cdot v^n} \\ &= P_x \frac{1 + a_{x, \bar{n}-1}}{n p_x \cdot v^n} - \left( v - \frac{a_{x\bar{n}}}{1 + a_{x, \bar{n}-1}} \right) \frac{1 + a_{x, \bar{n}-1}}{n p_x \cdot v^n} \\ &= P_x \frac{1 + a_{x, \bar{n}-1}}{n p_x \cdot v^n} - \frac{v(1 + a_{x, \bar{n}-1}) - a_{x\bar{n}}}{n p_x \cdot v^n}. \end{aligned}$$

When  $x+n$  is the limiting age in the Table of Mortality employed, the last equation becomes

$${}_nV_x = P_x(1 + a_x) - v(1 + a_x) - a_x = 0.$$

It is assumed as certain that the policy becomes a claim by death before the life assured attains the limiting age. The whole of the payments on account of mortality have been met, and no further separation of the premium into its respective portions, nor any accumulation of the endowment portion, is either possible or necessary.

This question has been very fully discussed by Mr. Meikle, in a paper read by him before the Actuarial Society of Edinburgh, on "The Value of a Policy," and afterwards published in the year 1865 as one of a series entitled "An Analysis of the Profits of Life Assurance."



$$\sum_n^{n+5} |V_x$$

←

# SUMS OF THE VALUES OF POLICIES

FOR **100,000**

AT RISK DURING SUCCESSIVE PERIODS OF **5** YEARS,

AT **3**, **3½**, **4**, & **4½** % INTEREST.

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_{n+5}^n V_x \text{ ——— Interest, } 3\%$$

Durations of Policies.  $n$ to $n+5$	AGE AT ENTRY, $x = 20$ .								Ages attained.
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H.M.	Institute of Actuaries' H.M. and H.M(s).	American Experience.	Thirty American Offices.	$x+n$ to $x+n+5$
0-5	2,267	2,354	2,095	2,198	2,181	5,140	1,887	1,997	20-25
5-10	6,977	7,160	6,575	6,838	6,902	8,875	5,975	6,305	25-30
10-15	11,895	12,148	11,666	12,005	12,221	13,577	10,735	11,267	30-35
15-20	17,215	17,431	17,437	17,762	18,060	19,160	16,249	16,915	35-40
20-25	22,879	23,309	23,975	24,110	24,554	25,459	22,578	23,255	40-45
25-30	29,136	29,888	31,219	31,023	31,671	32,468	29,737	30,245	45-50
30-35	36,746	36,729	38,937	38,396	39,266	39,906	37,608	37,789	50-55
35-40	45,142	43,563	46,903	46,115	47,207	47,672	45,941	45,719	55-60
40-45	52,835	50,666	54,884	54,027	55,184	55,522	54,410	53,796	60-65
45-50	60,256	58,028	62,567	61,752	62,950	63,175	62,631	61,724	65-70
50-55	67,757	65,412	69,660	68,825	70,234	70,394	70,230	69,188	70-75
55-60	73,833	72,810	75,990	74,924	76,559	76,674	77,130	75,904	75-80
60-65	78,863	79,542	81,541	79,924	81,597	81,691	83,451	81,694	80-85
65-70	82,974	84,005	86,549	83,867	85,942	86,087	89,145	86,677	85-90
70-75	84,014	89,917	90,990	86,900	90,984	91,210	93,731	90,640	90-95
	672,789	673,562	700,988	688,666	705,511	717,010	701,438	693,115	

AGE AT ENTRY, $x = 25$ .									
0-5	2,559	2,573	2,491	2,553	2,657	4,719	2,287	2,408	25-30
5-10	7,710	7,807	7,804	7,958	8,218	9,636	7,234	7,576	30-35
10-15	13,283	13,352	13,827	13,980	14,323	15,473	12,964	13,459	35-40
15-20	19,217	19,520	20,651	20,620	21,114	22,060	19,542	20,063	40-45
20-25	25,771	26,424	28,212	27,851	28,555	29,388	26,982	27,343	45-50
25-30	33,742	33,603	36,267	35,563	36,496	37,165	35,161	35,201	50-55
30-35	42,537	40,774	44,582	43,637	44,800	45,285	43,820	43,462	55-60
35-40	50,595	48,228	52,912	51,913	53,140	53,494	52,622	51,874	60-65
40-45	58,368	55,954	60,931	59,992	61,260	61,496	61,165	60,132	65-70
45-50	66,226	63,703	68,334	67,391	68,877	69,044	69,062	67,907	70-75
50-55	72,591	71,466	74,940	73,771	75,490	75,610	70,233	74,902	75-80
55-60	77,859	78,531	80,734	79,001	80,758	80,856	82,802	80,932	80-85
60-65	82,166	83,845	85,960	83,126	85,300	85,452	88,719	86,123	85-90
65-70	83,255	89,419	90,596	86,297	90,573	90,809	93,485	90,250	90-95
	635,879	635,199	668,241	653,653	671,560	680,487	672,078	661,632	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} |V_x \text{ ——— Interest, } 3\%.$$

Durations of Policies.  $n$ to $n+5$	AGE AT ENTRY, $x = 30$ .								Ages attained.
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries, I.M.	Institute of Actuaries, H.M. and H.M.S.	American Experience.	Thirty American Offices.	$x+n$ to $x+n+5$
0-5	2,731	2,806	2,971	3,005	3,067	4,565	2,788	2,899	30-35
5-10	8,605	8,651	9,309	9,351	9,515	10,730	8,792	9,080	35-40
10-15	14,859	15,154	16,491	16,349	16,687	17,686	15,685	16,017	40-45
15-20	21,766	22,432	24,448	23,968	24,546	25,425	23,482	23,667	45-50
20-25	30,167	30,000	32,926	32,095	32,932	33,639	32,053	31,922	50-55
25-30	39,437	37,561	41,676	40,604	41,702	42,215	41,127	40,600	55-60
30-35	47,930	45,419	50,443	49,325	50,510	50,884	50,351	49,439	60-65
35-40	56,122	53,564	58,883	57,840	59,086	59,335	59,304	58,114	65-70
40-45	64,404	61,734	66,674	65,637	67,130	67,307	67,580	66,283	70-75
45-50	71,112	69,918	73,627	72,359	74,115	74,242	75,094	73,632	75-80
50-55	76,665	77,366	79,724	77,870	79,678	79,781	81,977	79,968	80-85
55-60	81,203	82,968	85,225	82,217	84,476	84,636	88,179	85,420	85-90
60-65	82,352	88,845	90,103	85,560	90,044	90,293	93,173	89,757	90-95
	597,353	596,418	632,500	616,180	633,488	640,738	639,585	626,798	

AGE AT ENTRY, $x = 35$ .									
0-5	3,324	3,220	3,581	3,554	3,602	4,896	3,407	3,484	35-40
5-10	9,939	10,109	11,216	10,999	11,242	12,307	10,707	10,848	40-45
10-15	17,246	17,821	19,676	19,106	19,615	20,552	18,964	18,969	45-50
15-20	26,132	25,839	28,690	27,752	28,550	29,303	28,041	27,732	50-55
20-25	35,937	33,849	37,992	36,806	37,893	38,439	37,651	36,944	55-60
25-30	44,921	42,174	47,313	46,085	47,276	47,674	47,419	46,326	60-65
30-35	53,586	50,804	56,286	55,143	56,412	56,678	56,901	55,536	65-70
35-40	62,347	59,459	64,569	63,439	64,082	65,171	65,665	64,208	70-75
40-45	69,443	68,130	71,961	70,592	72,423	72,558	73,623	72,009	75-80
45-50	75,316	76,021	78,444	76,455	78,350	78,400	80,913	78,735	80-85
50-55	80,117	81,956	84,291	81,080	83,461	83,632	87,481	84,523	85-90
55-60	81,332	88,182	89,478	84,637	89,394	89,059	92,770	89,127	90-95
	559,640	557,564	593,497	575,648	593,200	599,329	603,512	588,441	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} V_x \text{ ——— Interest, } 3\%.$$

Durations of Policies.  $n$ to $n+5$	AGE AT ENTRY, $x = 40$ .								Ages attained.
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3. Males.	Institute of Actuaries H.M.	Institute of Actuaries H.M. and H.M.I.	American Experience.	Thirty American Offices.	$x+n$ to $x+n+5$
0-5	3,525	3,922	4,367	4,189	4,352	5,499	4,178	4,171	40-45
5-10	11,352	12,164	13,480	12,916	13,375	14,384	13,039	12,900	45-50
10-15	20,871	20,734	23,189	22,224	23,003	23,814	22,780	22,319	50-55
15-20	31,375	29,296	33,209	31,970	33,071	33,660	33,093	32,222	55-60
20-25	40,999	38,194	43,249	41,960	43,183	43,613	43,575	42,306	60-65
25-30	50,281	47,418	52,913	51,711	53,029	53,315	53,750	52,206	65-70
30-35	59,665	56,669	61,836	60,642	62,263	62,467	63,155	61,527	70-75
35-40	67,267	65,937	69,798	68,342	70,282	70,428	71,695	69,912	75-80
40-45	73,559	74,370	76,781	74,654	76,670	76,788	79,518	77,142	80-85
45-50	78,701	80,714	83,080	79,633	82,177	82,361	86,565	83,364	85-90
50-55	80,002	87,369	88,666	83,461	88,570	88,856	92,241	88,312	90-95
	517,597	516,787	550,568	531,702	549,975	555,185	563,589	546,381	

AGE AT ENTRY, $x = 45$ .									
0-5	4,628	4,687	5,200	4,953	5,116	6,222	5,109	4,972	45-50
5-10	14,870	13,987	15,837	15,113	15,662	16,551	15,739	15,249	50-55
10-15	26,170	23,278	26,817	25,750	26,690	27,335	26,992	26,053	55-60
15-20	36,524	32,933	37,817	36,652	37,767	38,237	38,430	37,055	60-65
20-25	46,510	42,942	48,407	47,295	48,551	48,864	49,533	47,856	65-70
25-30	56,606	52,080	58,183	57,041	58,666	58,889	59,795	58,025	70-75
30-35	64,784	63,037	66,007	65,447	67,449	67,609	69,113	67,174	75-80
35-40	71,553	72,189	74,559	72,336	74,446	74,575	77,650	75,061	80-85
40-45	77,086	79,072	81,460	77,770	80,478	80,680	85,340	81,850	85-90
45-50	78,485	86,293	87,582	81,949	87,480	87,794	91,534	87,248	90-95
	477,216	471,398	502,769	484,306	502,305	506,756	519,235	500,543	



Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} V_x \text{ ——— Interest, } 3\%$$

Durations of Policies. $n$ to $n+5$	AGE AT ENTRY, $x = 50$ .								Ages attained. $x+n$ to $x+n+5$
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> and H <sup>M</sup> (s).	American Experience.	Thirty American Offices.	
0-5	6,185	5,089	6,070	5,779	6,049	7,039	6,149	5,891	50-55
5-10	18,638	15,341	18,323	17,585	18,334	19,052	18,682	17,888	55-60
10-15	30,048	25,995	30,601	29,687	30,673	31,196	31,422	30,105	60-65
15-20	41,053	37,039	42,419	41,500	42,686	43,035	43,789	42,099	65-70
20-25	52,179	48,116	53,330	52,319	53,954	54,203	55,219	53,390	70-75
25-30	61,191	59,213	63,067	61,647	63,739	63,916	65,598	63,549	75-80
30-35	68,651	69,312	71,606	69,294	71,533	71,677	75,106	72,308	80-85
35-40	74,748	76,907	79,308	75,326	78,253	78,477	83,672	79,845	85-90
40-45	76,291	84,876	86,140	79,964	86,053	86,402	90,570	85,840	90-95
	428,984	421,888	450,864	433,101	451,272	454,997	470,207	450,915	
<b>AGE AT ENTRY, <math>x = 55</math>.</b>									
0-5	7,152	5,747	7,039	6,816	7,095	7,912	7,280	6,921	55-60
5-10	20,173	17,609	21,012	20,499	21,132	21,728	21,806	20,770	60-65
10-15	32,732	29,904	34,464	33,856	34,798	35,196	35,907	34,365	65-70
15-20	45,428	42,237	46,882	46,088	47,617	47,900	48,940	47,165	70-75
20-25	55,713	54,591	57,964	56,636	58,748	58,951	60,774	58,681	75-80
25-30	64,226	65,834	67,683	65,282	67,615	67,779	71,616	68,609	80-85
30-35	71,184	74,290	76,450	72,102	75,260	75,516	81,382	77,154	85-90
35-40	72,944	83,162	84,225	77,346	84,134	84,531	89,248	83,949	90-95
	369,552	373,374	395,719	378,625	396,399	399,513	416,953	397,614	
<b>AGE AT ENTRY, <math>x = 60</math>.</b>									
0-5	6,849	6,908	8,071	7,951	8,090	8,784	8,481	8,041	60-65
5-10	21,504	20,801	23,726	23,416	24,017	24,479	24,985	23,821	65-70
10-15	36,320	34,735	38,179	37,579	38,955	39,284	40,239	38,677	70-75
15-20	48,320	48,694	51,077	49,791	51,927	52,163	54,090	52,042	75-80
20-25	58,254	61,397	62,388	59,802	62,260	62,451	66,779	63,566	80-85
25-30	66,374	70,951	72,591	67,698	71,169	71,467	78,209	73,483	85-90
30-35	68,427	80,975	81,641	73,770	81,510	81,973	87,416	81,371	90-95
	306,048	324,461	337,673	320,007	337,927	340,601	360,199	341,001	



Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first period. Average Duration of Policies,  $n + 2\frac{1}{2}$  Years.

$$\sum_n^{n+5} V_x \text{ ——— Interest, } 3\frac{1}{2}\%$$

Durations of Policies.	AGE AT ENTRY, $x = 20$ .								Ages attained.
	$n$ to $n+5$	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3. Males.	Institute of Actuaries H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> and H <sup>M</sup> (s).	American Experience.	
0-5	2,047	2,137	1,866	1,978	1,946	4,803	1,660	1,756	20-25
5-10	6,329	6,520	5,896	6,182	6,207	8,118	5,299	5,588	25-30
10-15	10,841	11,111	10,556	10,938	11,093	12,410	9,622	10,086	30-35
15-20	15,785	16,030	15,933	16,323	16,542	17,618	14,728	15,299	35-40
20-25	21,112	21,591	22,138	22,353	22,709	23,600	20,703	21,248	40-45
25-30	27,087	27,918	29,133	29,019	29,578	30,370	27,587	27,915	45-50
30-35	34,518	34,586	36,697	36,232	37,018	37,663	35,289	35,212	50-55
35-40	42,865	41,320	44,618	43,894	44,914	45,385	43,573	43,218	55-60
40-45	50,588	48,407	52,661	51,855	52,954	53,298	52,112	51,528	60-65
45-50	58,125	55,849	60,494	59,721	60,881	61,110	60,507	59,604	65-70
50-55	65,850	63,409	67,806	67,000	68,398	68,563	68,358	67,295	70-75
55-60	72,160	71,075	74,394	73,335	74,989	75,110	75,556	74,289	75-80
60-65	77,422	78,125	80,223	78,567	80,283	80,379	82,220	80,375	80-85
65-70	81,762	83,464	85,529	82,722	84,876	85,032	88,280	85,658	85-90
70-75	82,852	89,123	90,270	86,166	90,259	90,504	93,204	89,886	90-95
	649,343	650,665	698,214	666,285	682,647	693,963	678,698	668,957	

AGE AT ENTRY, $x = 25$ .									
0-5	2,331	2,346	2,247	2,318	2,409	4,397	2,047	2,151	25-30
5-10	7,035	7,141	7,088	7,270	7,493	8,863	6,518	6,813	30-35
10-15	12,191	12,281	12,674	12,876	13,162	14,283	11,799	12,215	35-40
15-20	17,749	18,089	19,119	19,155	19,579	20,506	17,980	18,381	40-45
20-25	23,975	24,700	26,386	26,095	26,727	27,550	25,100	25,291	45-50
25-30	31,724	31,665	34,243	33,605	34,468	35,139	33,067	32,854	50-55
30-35	40,427	38,700	42,471	41,583	42,683	43,174	41,635	41,151	55-60
35-40	48,479	46,103	50,826	49,872	51,049	51,407	50,467	49,763	60-65
40-45	56,337	53,877	58,963	58,062	59,297	59,535	59,150	58,133	65-70
45-50	64,392	61,775	66,558	65,641	67,118	67,290	67,268	66,104	70-75
50-55	70,971	69,784	73,402	72,236	73,977	74,102	74,716	73,353	75-80
55-60	76,458	77,149	79,457	77,684	79,484	79,585	81,609	79,661	80-85
60-65	80,983	82,726	84,968	82,011	84,264	84,426	87,878	85,136	85-90
65-70	82,120	88,637	89,893	85,596	89,865	90,120	92,970	89,518	90-95
	615,172	614,973	648,295	634,004	651,575	660,377	652,204	640,524	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} |V_x \text{ ——— Interest, } 3\frac{1}{2}\%$$

Durations of Policies. $n$ to $n+5$	AGE AT ENTRY, $x = 30$ .								Ages attained.
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries, H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> and H <sup>M</sup> (S).	American Experience.	Thirty American Offices.	$x+n$ to $x+n+5$
0-5	2,489	2,570	2,716	2,763	2,810	4,249	2,528	2,624	30-35
5-10	7,897	7,962	8,564	8,641	8,766	9,943	8,034	8,269	35-40
10-15	13,723	14,057	15,313	15,225	15,508	16,481	14,478	14,712	40-45
15-20	20,258	20,993	22,921	22,503	23,017	23,882	21,903	21,933	45-50
20-25	28,385	28,300	31,148	30,378	31,150	31,855	30,209	29,835	50-55
25-30	37,514	35,682	39,764	38,745	39,782	40,297	39,143	38,506	55-60
30-35	45,960	43,449	48,511	47,436	48,571	48,947	48,352	47,505	60-65
35-40	54,202	51,607	57,031	56,024	57,236	57,486	57,406	56,251	65-70
40-45	62,651	59,893	64,984	63,971	65,454	65,634	65,871	64,580	70-75
45-50	69,552	68,296	72,150	70,887	72,659	72,790	73,637	72,155	75-80
50-55	75,307	76,024	78,490	76,600	78,446	78,551	80,824	78,747	80-85
55-60	80,053	81,875	84,260	81,136	83,467	83,637	87,360	84,467	85-90
60-65	81,246	88,078	89,417	84,895	89,352	89,619	92,670	89,046	90-95
	579,237	578,786	615,269	599,204	616,218	623,371	622,415	608,630	

AGE AT ENTRY, $x = 35$ .									
0-5	3,071	2,976	3,312	3,299	3,334	4,581	3,137	3,188	35-40
5-10	9,202	9,400	10,449	10,267	10,477	11,509	9,925	9,988	40-45
10-15	16,080	16,712	18,494	17,970	18,434	19,351	17,745	17,609	45-50
15-20	24,633	24,416	27,194	26,306	27,050	27,798	26,493	25,949	50-55
20-25	34,240	32,198	36,304	35,161	36,196	36,742	35,903	35,100	55-60
25-30	43,129	40,385	45,554	44,362	45,509	45,907	45,603	44,597	60-65
30-35	51,803	48,985	54,563	53,452	54,690	54,955	55,139	53,828	65-70
35-40	60,694	57,721	62,973	61,864	63,397	63,588	64,054	62,619	70-75
40-45	67,956	66,579	70,550	69,184	71,031	71,171	72,233	70,613	75-80
45-50	74,013	74,725	77,254	75,231	77,162	77,274	79,803	77,570	80-85
50-55	79,008	80,893	83,356	80,033	82,483	82,663	86,687	83,607	85-90
55-60	80,263	87,432	88,809	84,012	88,718	89,001	92,280	88,440	90-95
	544,092	542,422	578,812	561,141	578,481	584,540	589,002	573,108	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_{n}^{n+5} V_x \text{ ——— Interest, } 3\frac{1}{2}\%$$

Durations of Policies.	AGE AT ENTRY, $x = 40$ .								Ages attained. $x+n$ to $x+n+5$
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H.M.	Institute of Actuaries' H.M. and I.I.M.	American Experience.	Thirty American Offices.	
0-5	3,260	3,667	4,096	3,929	4,081	5,186	3,895	3,858	40-45
5-10	10,588	11,442	12,712	12,177	12,606	13,588	12,238	11,997	45-50
10-15	19,700	19,633	22,029	21,101	21,838	22,639	21,572	20,906	50-55
15-20	29,936	27,907	31,785	30,581	31,638	32,222	31,612	30,680	55-60
20-25	39,407	36,613	41,692	40,432	41,616	42,042	41,961	40,824	60-65
25-30	48,649	45,756	51,340	50,164	51,453	51,737	52,135	50,683	65-70
30-35	58,122	55,045	60,346	59,170	60,782	60,986	61,647	60,073	70-75
35-40	65,859	64,464	68,461	67,008	68,962	69,111	70,374	68,611	75-80
40-45	72,313	73,125	75,641	73,482	75,531	75,650	78,451	76,042	80-85
45-50	77,634	79,684	82,175	78,623	81,231	81,424	85,796	82,491	85-90
50-55	78,971	86,637	88,015	82,883	87,911	88,216	91,763	87,652	90-95
	504,439	503,973	538,292	519,550	537,649	542,801	551,444	533,817	

AGE AT ENTRY, $x = 45$ .									
0-5	4,350	4,433	4,924	4,686	4,839	5,908	4,824	4,640	45-50
5-10	14,099	13,272	15,072	14,372	14,891	15,764	14,947	14,293	50-55
10-15	25,049	22,201	25,699	24,661	25,562	26,199	25,835	24,884	55-60
15-20	35,182	31,596	36,489	35,351	36,426	36,891	37,058	35,876	60-65
20-25	45,067	41,464	46,998	45,914	47,138	47,447	48,092	46,500	65-70
25-30	55,200	51,487	56,808	55,688	57,296	57,519	58,407	56,735	70-75
30-35	63,478	61,651	65,647	64,194	66,203	66,365	67,872	65,987	75-80
35-40	70,381	70,998	73,467	71,220	73,356	73,486	76,630	74,039	80-85
40-45	76,074	78,076	80,585	76,799	79,563	79,774	84,596	81,027	85-90
45-50	77,505	85,579	86,946	81,423	86,837	87,168	91,067	86,620	90-95
	466,385	460,757	492,635	474,308	492,111	496,521	509,328	490,661	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} V_x \text{ ——— Interest, } 3\frac{1}{2}\%$$

Durations of Policies.  $n$ to $n+5$	AGE AT ENTRY, $x = 50$ .								Ages attained.
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> and H <sup>M(S)</sup> .	American Experience.	Thirty American Offices.	$x+n$ to $x+n+5$
0-5	5,912	4,836	5,795	5,516	5,773	6,739	5,865	5,526	50-55
5-10	17,906	14,634	17,583	16,869	17,587	18,291	17,915	17,201	55-60
10-15	29,002	24,942	29,552	28,665	29,615	30,130	30,337	29,317	60-65
15-20	39,831	35,769	41,209	40,320	41,475	41,816	42,549	41,094	65-70
20-25	50,932	46,768	52,090	51,105	52,721	52,968	53,966	52,309	70-75
25-30	59,997	57,921	61,894	60,491	62,582	62,762	64,441	62,508	75-80
30-35	67,559	68,177	70,569	68,244	70,501	70,646	74,135	71,383	80-85
35-40	73,794	75,944	78,464	74,400	77,374	77,606	82,951	79,086	85-90
40-45	75,361	84,176	85,520	79,502	85,427	85,793	90,114	85,251	90-95
	420,294	413,167	442,676	425,112	443,055	446,751	462,273	443,675	

AGE AT ENTRY,  $x = 55$ .

0-5	6,896	5,493	6,779	6,562	6,829	7,626	7,007	6,912	55-60
5-10	19,481	16,906	20,317	19,819	20,428	21,010	21,080	20,534	60-65
10-15	31,762	28,892	33,502	32,919	33,835	34,222	34,914	33,774	65-70
15-20	44,351	41,068	45,809	45,042	46,549	46,828	47,849	46,383	70-75
20-25	54,633	53,415	56,899	55,591	57,698	57,901	59,716	57,849	75-80
25-30	63,208	64,770	66,711	64,306	66,651	66,814	70,698	67,828	80-85
30-35	70,280	73,368	75,641	71,225	74,420	74,683	80,686	76,487	85-90
35-40	72,056	82,482	83,622	76,960	83,525	83,939	88,800	83,419	90-95
	362,667	366,394	389,280	372,424	389,935	393,023	410,750	393,186	

AGE AT ENTRY,  $x = 60$ .

0-5	6,599	6,650	7,819	7,711	7,840	8,514	8,217	7,786	60-65
5-10	20,844	20,116	23,072	22,789	23,369	23,816	24,307	23,150	65-70
10-15	35,447	33,795	37,310	36,743	38,094	38,417	39,349	37,782	70-75
15-20	47,374	47,666	50,139	48,885	51,006	51,241	53,150	51,087	75-80
20-25	57,322	60,422	61,489	58,915	61,375	61,564	65,922	62,666	80-85
25-30	65,525	70,081	71,821	66,882	70,374	70,678	77,538	72,715	85-90
30-35	67,586	80,320	81,053	73,481	80,918	81,398	86,974	80,759	90-95
	300,697	319,050	332,703	315,406	332,976	335,628	355,457	335,945	



Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_{n+5}^n |V_x \text{ ——— Interest, } 4\% \text{ ———}$$

Duration of Policies. $n$ to $n+5$	AGE AT ENTRY, $x = 20$ .								Ages attained.
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H.M.	Institute of Actuaries' H.M. and H.M(s).	American Experience.	Thirty American Offices.	$x+n$ to $x+n+5$
0-5	1,852	1,944	1,666	1,780	1,738	4,500	1,465	1,565	20-25
5-10	5,751	5,948	5,293	5,595	5,589	7,437	4,704	5,017	25-30
10-15	9,893	10,176	9,557	9,976	10,079	11,352	8,626	9,145	30-35
15-20	14,485	14,754	14,562	15,010	15,160	16,209	13,350	14,016	35-40
20-25	19,484	20,008	20,441	20,732	21,004	21,882	18,982	19,679	40-45
25-30	25,178	26,089	27,184	27,152	27,619	28,411	25,591	26,137	45-50
30-35	32,422	32,575	34,584	34,197	34,894	35,543	33,109	33,328	50-55
35-40	40,701	39,193	42,437	41,781	42,726	43,201	41,316	41,115	55-60
40-45	48,430	46,245	50,517	49,765	50,802	51,153	49,893	49,268	60-65
45-50	56,058	53,742	58,480	57,746	58,860	59,097	58,434	57,476	65-70
50-55	63,981	61,446	65,986	65,211	66,590	66,763	66,507	65,384	70-75
55-60	70,504	69,361	72,814	71,766	73,435	73,562	73,990	72,646	75-80
60-65	75,990	76,718	78,909	77,221	78,971	79,075	80,987	79,023	80-85
65-70	80,552	82,325	84,502	81,578	83,807	83,972	87,412	84,606	85-90
70-75	81,691	88,325	89,540	84,961	89,526	89,786	92,671	89,105	90-95
	626,972	628,849	656,472	644,471	660,800	671,943	657,037	647,510	

AGE AT ENTRY, $x = 25$ .									
0-5	2,127	2,144	2,029	2,110	2,189	4,103	1,828	1,947	25-30
5-10	6,428	6,543	6,440	6,652	6,840	8,159	5,868	6,209	30-35
10-15	11,196	11,306	11,618	11,872	12,104	13,190	10,735	11,236	35-40
15-20	16,388	16,773	17,699	17,805	18,158	19,068	16,537	17,083	40-45
20-25	22,301	23,099	24,674	24,463	25,012	25,832	23,345	23,750	45-50
25-30	29,823	29,847	32,330	31,767	32,548	33,221	31,090	31,173	50-55
30-35	38,420	36,734	40,454	39,631	40,662	41,156	39,544	39,212	55-60
35-40	46,447	44,071	48,811	47,910	49,030	49,393	48,380	47,628	60-65
40-45	54,368	51,871	57,049	56,186	57,378	57,624	57,179	56,102	65-70
45-50	62,596	59,887	64,814	63,926	65,387	65,566	65,496	64,265	70-75
50-55	69,370	68,122	71,877	70,724	72,478	72,610	73,205	71,761	75-80
55-60	75,066	75,776	78,182	76,380	78,213	78,321	80,413	78,345	80-85
60-65	79,804	81,610	83,968	80,897	83,223	83,395	87,032	84,108	85-90
65-70	80,987	87,853	89,180	84,406	89,149	89,418	92,449	88,753	90-95
	595,321	595,636	629,125	614,729	632,371	641,056	633,101	621,572	



Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} V_x \text{ ——— Interest, } 4\% \text{ }_0$$

Durations of Policies. $n$ to $n+5$	AGE AT ENTRY, $x = 30$ .								Ages attained. $n+1$ to $n+5$
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3. Males.	Institute of Actuaries, I.M.	Institute of Actuaries, H.M. and H.M.S.	American Experience.	Thirty American Offices.	
0-5	2,271	2,356	2,483	2,540	2,576	3,955	2,296	2,408	30-35
5-10	7,251	7,333	7,880	7,990	8,080	9,216	7,348	7,640	35-40
10-15	12,674	13,044	14,218	14,185	14,412	15,363	13,370	13,723	40-45
15-20	18,849	19,654	21,488	21,135	21,579	22,437	20,436	20,661	45-50
20-25	26,706	26,705	29,468	28,762	29,461	30,164	28,476	28,385	50-55
25-30	35,685	33,899	37,935	36,972	37,946	38,462	37,251	36,749	55-60
30-35	44,068	41,565	46,646	45,615	46,696	47,077	46,422	45,506	60-65
35-40	52,341	49,715	55,233	54,256	55,427	55,684	55,555	54,323	65-70
40-45	60,934	58,090	63,326	62,337	63,802	63,990	64,187	62,818	70-75
45-50	68,009	66,694	70,687	69,434	71,218	71,356	72,189	70,617	75-80
50-55	73,959	74,691	77,259	75,339	77,216	77,329	79,670	77,468	80-85
55-60	78,907	80,786	83,290	80,056	82,455	82,635	86,540	83,464	85-90
60-65	80,142	87,309	88,722	83,719	88,652	88,933	92,163	88,297	90-95
	561,796	561,841	598,635	582,340	599,520	606,601	605,903	592,059	

AGE AT ENTRY,  $x = 35$ .

0-5	2,838	2,751	3,065	3,065	3,088	4,286	2,888	2,966	35-40
5-10	8,518	8,745	9,735	9,591	9,763	10,766	9,200	9,357	40-45
10-15	14,988	15,682	17,385	16,914	17,320	18,224	16,607	16,646	45-50
15-20	23,218	23,081	25,782	24,949	25,629	26,371	25,033	24,761	50-55
20-25	32,624	30,631	34,691	33,599	34,576	35,119	34,230	33,548	55-60
25-30	41,406	38,676	43,858	42,705	43,801	44,202	43,843	42,748	60-65
30-35	50,073	47,228	52,893	51,807	53,006	53,277	53,415	52,012	65-70
35-40	59,075	56,018	61,409	60,322	61,836	62,034	62,463	60,936	70-75
40-45	66,487	65,047	69,155	67,798	69,655	69,800	70,850	69,131	75-80
45-50	72,719	73,439	76,070	74,020	75,978	76,098	78,692	76,328	80-85
50-55	77,903	79,836	82,417	78,989	81,503	81,692	85,892	82,628	85-90
55-60	79,197	86,681	88,133	82,848	88,036	88,332	91,786	87,705	90-95
	529,046	527,815	564,593	546,607	564,191	570,201	574,899	558,766	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_{n}^{n+5} V_x \text{ ——— Interest, } 4\%.$$

Duration of Policies.  $n$ to $n+5$	AGE AT ENTRY, $x = 40$ .								Ages attained.  $x+n$ to $x+n+5$
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> and H <sup>M</sup> (s).	American Experience.	Thirty American Offices.	
0-5	3,014	3,432	3,840	3,687	3,824	4,893	3,634	3,641	40-45
5-10	9,873	10,772	11,990	11,488	11,878	12,842	11,494	11,389	45-50
10-15	18,598	18,602	20,935	20,047	20,734	21,525	20,437	20,016	50-55
15-20	28,571	26,592	30,426	29,262	30,270	30,849	30,198	29,357	55-60
20-25	37,881	35,106	40,191	38,962	40,102	40,530	40,400	39,138	60-65
25-30	47,070	44,156	49,817	48,660	49,913	50,201	50,560	48,985	65-70
30-35	56,613	53,457	58,889	57,730	59,324	59,535	60,162	58,472	70-75
35-40	64,471	63,012	67,141	65,695	67,657	67,812	69,063	67,184	75-80
40-45	71,078	71,893	74,508	72,323	74,397	74,524	77,386	74,835	80-85
45-50	76,574	78,662	81,268	77,616	80,285	80,487	85,027	81,532	85-90
50-55	77,946	85,906	87,358	81,727	87,248	87,564	91,282	86,930	90-95
	491,689	491,590	526,363	507,197	525,632	530,762	539,643	521,479	

AGE AT ENTRY, $x = 45$ .									
0-5	4,091	4,197	4,668	4,442	4,580	5,624	4,558	4,430	45-50
5-10	13,376	12,604	14,357	13,682	14,170	15,026	14,202	13,734	50-55
10-15	23,989	21,182	24,638	23,631	24,495	25,122	24,728	23,809	55-60
15-20	33,896	30,323	35,216	34,104	35,142	35,605	35,729	34,358	60-65
20-25	43,674	40,040	45,642	44,573	45,765	46,077	46,685	44,979	65-70
25-30	53,830	50,027	55,469	54,365	55,956	56,184	57,040	55,211	70-75
30-35	62,191	60,286	64,407	62,964	64,979	65,147	66,638	64,606	75-80
35-40	69,222	69,821	72,387	70,119	72,277	72,415	75,613	72,859	80-85
40-45	75,071	77,090	79,710	75,835	78,652	78,871	83,854	80,082	85-90
45-50	76,531	84,867	86,306	80,273	86,192	86,534	90,599	85,903	90-95
	455,871	450,437	482,800	463,988	482,208	486,605	499,646	479,971	

Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.

$$\sum_n^{n+5} V_x \quad \text{Interest, } 4\%$$

Durations of Policies. $n$ to $n+5$	AGE AT ENTRY, $x = 50$ .								Ages attained. $x+n$ to $x+n+5$
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' I.M.	Institute of Actuaries' I.M. and I.M.S.	American Experience.	Thirty American Offices.	
0-5	5,657	4,596	5,538	5,267	5,515	6,457	5,596	5,348	50-55
5-10	17,215	13,961	16,878	16,186	16,881	17,572	17,178	16,403	55-60
10-15	28,005	23,939	28,545	27,679	28,602	29,111	29,283	27,977	60-65
15-20	38,655	34,547	40,045	39,169	40,296	40,640	41,337	39,630	65-70
20-25	49,715	45,448	50,883	49,916	51,514	51,766	52,731	50,857	70-75
25-30	58,822	56,647	60,742	59,353	61,447	61,632	63,292	61,166	75-80
30-35	66,479	67,056	69,543	67,206	69,481	69,633	73,167	70,220	80-85
35-40	72,850	74,991	77,621	73,479	76,500	76,740	82,234	78,145	85-90
40-45	74,439	83,480	84,896	78,349	84,800	85,177	89,656	84,533	90-95
	411,837	404,665	434,691	416,604	435,036	438,728	454,474	434,279	
AGE AT ENTRY, $x = 55$ .									
0-5	6,654	5,251	6,524	6,317	6,576	7,353	6,740	6,390	55-60
5-10	18,821	16,240	19,644	19,164	19,750	20,323	20,371	19,351	60-65
10-15	30,829	27,921	32,576	32,007	32,895	33,281	33,944	32,399	65-70
15-20	43,301	39,926	44,765	44,020	45,504	45,786	46,774	44,971	70-75
20-25	53,569	52,259	55,852	54,568	56,668	56,875	58,666	56,514	75-80
25-30	62,203	63,722	65,750	63,345	65,698	65,868	69,785	66,653	80-85
30-35	69,386	72,459	74,833	70,356	73,586	73,856	79,995	75,528	85-90
35-40	71,179	81,808	83,015	75,800	82,915	83,339	88,352	82,680	90-95
	355,942	359,586	382,959	365,577	383,592	386,681	404,627	384,486	
AGE AT ENTRY, $x = 60$ .									
0-5	6,358	6,411	7,586	7,474	7,596	8,256	7,964	7,533	60-65
5-10	20,210	19,463	22,458	22,174	22,732	23,176	23,652	22,494	65-70
10-15	34,596	32,876	36,476	35,924	37,250	37,575	38,481	36,908	70-75
15-20	46,441	46,657	49,227	47,997	50,105	50,344	52,226	50,143	75-80
20-25	56,401	59,464	60,610	58,044	60,503	60,699	65,078	61,767	80-85
25-30	64,686	69,227	71,056	66,069	69,586	69,897	76,878	71,942	85-90
30-35	66,754	79,673	80,466	72,301	80,328	80,816	86,537	80,143	90-95
	295,446	313,771	327,879	309,983	328,100	330,763	350,816	330,930	

*Sums of the Values of Policies for 100,000 at Risk during successive Periods of 5 Years, the amount at risk being distributed over 100,000 Policies for 1 each, issued at equidistant intervals throughout the first Period. Average Duration of Policies,  $n+2\frac{1}{2}$  Years.*

$$\sum_n^{n+5} V_x \text{ ——— Interest, } 4\frac{1}{2}\%$$

<b>AMERICAN EXPERIENCE.</b>									
Durations of Policies. $n$ to $n+5$	AGES AT ENTRY								
	$x=20$	$x=25$	$x=30$	$x=35$	$x=40$	$x=45$	$x=50$	$x=55$	$x=60$
0-5	1,290	1,638	2,085	2,660	3,392	4,305	5,341	6,488	7,723
5-10	4,177	5,293	6,719	8,531	10,797	13,492	16,478	19,696	23,022
10-15	7,737	9,775	12,345	15,542	19,360	23,669	28,275	33,011	37,641
15-20	12,103	15,217	19,064	23,650	28,847	34,451	40,167	45,733	51,327
20-25	17,405	21,715	26,834	32,633	38,898	45,319	51,530	57,643	64,245
25-30	23,736	29,231	35,441	42,148	49,028	55,703	62,168	68,884	76,215
30-35	31,057	37,556	44,560	51,740	58,708	65,425	72,208	79,301	86,095
35-40	39,168	46,377	53,752	60,905	67,770	74,601	81,513	87,900	...
40-45	47,760	55,267	62,535	69,485	76,324	83,104	89,192	...	...
45-50	56,422	63,762	70,757	77,584	84,250	90,123	...	...	...
50-55	64,698	71,715	78,518	85,088	90,793	...	...	...	...
55-60	72,445	79,222	85,710	91,283	...	...	...	...	...
60-65	79,758	86,178	91,646	...	...	...	...	...	...
65-70	86,535	91,920	...	...	...	...	...	...	...
70-75	92,128	...	...	...	...	...	...	...	...
	636,419	614,866	589,966	561,249	528,167	490,192	446,872	398,656	346,268

<b>THIRTY AMERICAN OFFICES.</b>									
Durations of Policies. $n$ to $n+5$	AGES AT ENTRY								
	$x=20$	$x=25$	$x=30$	$x=35$	$x=40$	$x=45$	$x=50$	$x=55$	$x=60$
0-5	1,389	1,751	2,197	2,743	3,403	4,185	5,100	6,142	7,295
5-10	4,481	5,621	7,016	8,703	10,706	13,043	15,714	18,678	21,865
10-15	8,244	10,272	12,714	15,605	18,961	22,768	26,974	31,460	36,059
15-20	12,765	15,770	19,313	23,407	28,024	33,086	38,451	43,910	49,223
20-25	18,110	22,138	26,772	31,973	37,640	43,602	49,632	55,458	60,885
25-30	24,301	29,336	34,962	41,061	47,441	53,847	60,002	65,688	71,179
30-35	31,300	37,239	43,650	50,324	56,988	63,349	69,188	74,718	79,527
35-40	38,983	45,623	52,507	59,348	65,843	71,767	77,297	82,041	...
40-45	47,134	54,170	61,134	67,717	73,688	79,197	83,873	...	...
45-50	55,443	62,495	69,136	75,132	80,613	85,223	...	...	...
50-55	63,537	70,216	76,224	81,676	86,228	...	...	...	...
55-60	71,044	77,057	82,481	86,984	...	...	...	...	...
60-65	77,694	83,095	87,556	...	...	...	...	...	...
65-70	83,564	87,991	...	...	...	...	...	...	...
70-75	88,325	...	...	...	...	...	...	...	...
	626,314	602,774	575,662	544,673	509,536	470,067	426,231	378,095	326,033



# FORMULAS ON THE CONTINUOUS METHOD,

DRAWN CHIEFLY FROM MR. WOOLHOUSE'S PAPER "ON AN IMPROVED THEORY OF ANNUITIES AND ASSURANCES" (*Journal of the Institute*, VOL. XV., p. 95).

Force of discount,  $\delta = -\frac{d \log_{\epsilon}(v^x)}{dx} = -\frac{d(x \log_{\epsilon} v)}{dx} = -\log_{\epsilon} v = \log_{\epsilon}(1+i)$

Force of mortality,  $\mu_x = -\frac{d \log_{\epsilon} l_x}{dx} = -\frac{1}{l_x} \cdot \frac{dl_x}{dx} \qquad \mu_{[x]} = 0$

$$\mu_{xy} = -\frac{d \log_{\epsilon} l_{xy}}{dt} = -\frac{d \log_{\epsilon} l_x}{dx} - \frac{d \log_{\epsilon} l_y}{dy} = \mu_x + \mu_y$$

$$\mu_{\bar{xy}} = \mu_x + \mu_y - \mu_{xy} = 0$$

$$a_x^{(m)} = a_x + \frac{m-1}{2m} - \frac{m^2-1}{12m^2} (\mu_x + \delta)$$

$$= a_x + \frac{1}{4} - \frac{1}{16} (\mu_x + \delta), \text{ when } m=2, \text{ and } = a_x + \frac{3}{8} - \frac{5}{64} (\mu_x + \delta), \text{ when } m=4$$

$$a_x^{(m)} = a_x + \frac{m+1}{2m} - \frac{m^2-1}{12m^2} (\mu_x + \delta)$$

$$a_{xy}^{(m)} = a_{xy} + \frac{m+1}{2m} - \frac{m^2-1}{12m^2} (\mu_x + \mu_y + \delta)$$

$$\bar{a}_x = a_x + \frac{1}{2} - \frac{\mu_x + \delta}{12}$$

$$\bar{a}_x^{(m)} = \left(1 - \frac{\delta}{2m}\right) \bar{a}_x + \frac{\delta}{12m^2}$$

$$\bar{a}_{xy} = a_{xy} + \frac{1}{2} - \frac{\mu_x + \mu_y + \delta}{12}$$

$$\bar{a}_{\bar{xy}} = \bar{a}_x + \bar{a}_y - \bar{a}_{xy} = \bar{a}_{xy} + \frac{1}{2} - \frac{\delta}{12}, \quad \text{or } = a_{\bar{xy}} + \frac{1}{\delta} - \frac{1}{i}$$

$$\bar{A}_x = \mu \bar{a}_x - \frac{d\bar{a}_x}{dx}, \quad \text{or } = 1 - \delta \bar{a}_x, \quad \text{or } = \delta \left( \frac{1}{i} - a_x + \frac{\mu_x}{12} \right)$$

$$\bar{A}_{xy} = \mu_{xy} \bar{a}_{xy} - \frac{d\bar{a}_{xy}}{dt}, \quad \text{or } = 1 - \delta \bar{a}_{xy}, \quad \text{or } = \delta \left( \frac{1}{i} - a_{xy} + \frac{\mu_{xy}}{12} \right)$$

$$\bar{A}_{\bar{xy}} = \bar{A}_x + \bar{A}_y - \bar{A}_{xy} = 1 - \delta \bar{a}_{\bar{xy}} \quad \text{or } = \delta \left( \frac{1}{i} - a_{\bar{xy}} \right)$$

$$\bar{A}_{xy}^1 = \mu_x \bar{a}_{xy} - \frac{d\bar{a}_{xy}}{dx} = \mu_x (a_{xy} + \frac{1}{2}) + \frac{1}{2} (a_{x-1,y} - a_{x+1,y}), \text{ if } (a_{xy} + \frac{1}{2}) \text{ be taken } = \bar{a}_{xy}$$

$$\bar{A}_{x:y(n)}^1 = \bar{A}_x - \frac{D_{x+n}}{D_x} (\bar{A}_{x+n} - \bar{A}_{x+1,y})$$

NOTE.—Sufficient accuracy, Mr. Woolhouse says (*J.I.A.* xv., 115), will be attained by making

$$\begin{array}{l} \mu_x = \frac{l_{x-1} - l_{x+1}}{2l_x} \\ - \frac{d\bar{a}_x}{dx} = \frac{1}{2} (\bar{a}_{x-1} - \bar{a}_{x+1}) \\ - \frac{d\bar{a}_{xy}}{dt} = \frac{1}{2} (\bar{a}_{x-1,y} - \bar{a}_{x+1,y}) \end{array} \quad \left| \quad \begin{array}{l} - \frac{d\bar{a}_{xy}}{dy} = \frac{1}{2} (\bar{a}_{x,y-1} - \bar{a}_{x,y+1}) \\ - \frac{d\bar{a}_{xy}}{dt} = \frac{1}{2} (\bar{a}_{x-1,y-1} - \bar{a}_{x+1,y+1}) \end{array} \right.$$



APPROXIMATE VALUES OF  $\mu_x$  ACCORDING TO FORMULA  $\mu_x = \frac{l_{x-1} - l_{x+1}}{2l_x}$ .

$\mu_x$					$\mu_x$				
Age.	Carlisle.	Seventeen Offices.	Institute of Actuaries' H.M.	Thirty American Offices.	Age.	Carlisle.	Seventeen Offices.	Institute of Actuaries' H.M.	Thirty American Offices.
10	·00180	...	...	...	45	·01491	·01202	·01194	·01104
11	·00466	·00680	·00446	·00651	46	·01492	·01260	·01264	·01151
12	·00492	·00682	·00366	·00653	47	·01482	·01326	·01311	·01203
13	·00510	·00685	·00312	·00655	48	·01438	·01398	·01417	·01260
14	·00537	·00690	·00284	·00657	49	·01391	·01476	·01494	·01322
15	·00587	·00694	·00282	·00660	50	·01365	·01561	·01570	·01391
16	·00647	·00700	·00306	·00663	51	·01395	·01655	·01644	·01467
17	·00683	·00706	·00357	·00665	52	·01485	·01757	·01725	·01550
18	·00696	·00712	·00434	·00669	53	·01579	·01868	·01823	·01641
19	·00701	·00720	·00528	·00672	54	·01665	·01989	·01934	·01741
20	·00706	·00727	·00605	·00676	55	·01755	·02120	·02058	·01852
21	·00703	·00736	·00655	·00681	56	·01863	·02264	·02197	·01973
22	·00699	·00745	·00681	·00686	57	·02013	·02418	·02348	·02107
23	·00704	·00754	·00683	·00691	58	·02277	·02584	·02510	·02255
24	·00709	·00764	·00672	·00697	59	·02654	·02767	·02692	·02416
25	·00723	·00775	·00666	·00703	60	·03129	·02970	·02900	·02593
26	·00737	·00786	·00668	·00710	61	·03522	·03195	·03131	·02789
27	·00760	·00798	·00682	·00718	62	·03726	·03442	·03387	·03003
28	·00826	·00810	·00706	·00726	63	·03856	·03712	·03668	·03239
29	·00930	·00824	·00733	·00736	64	·03977	·04008	·03968	·03499
30	·01001	·00838	·00761	·00746	65	·04125	·04332	·04277	·03785
31	·01021	·00854	·00785	·00757	66	·04267	·04686	·04599	·04099
32	·01022	·00870	·00804	·00769	67	·04439	·05073	·04937	·04445
33	·01014	·00887	·00823	·00783	68	·04645	·05495	·05287	·04824
34	·01015	·00905	·00843	·00798	69	·04891	·05950	·05678	·05241
35	·01026	·00923	·00868	·00815	70	·05165	·06443	·06151	·05701
36	·01016	·00943	·00898	·00833	71	·05665	·06980	·06718	·06205
37	·01076	·00963	·00933	·00853	72	·06533	·07563	·07398	·06760
38	·01107	·00984	·00967	·00875	73	·07561	·08195	·08194	·07368
39	·01158	·01007	·00998	·00899	74	·08745	·08883	·09077	·08040
40	·01251	·01030	·01025	·00926	75	·09731	·09631	·09935	·08779
41	·01348	·01054	·01045	·00955	76	·10429	·10442	·10773	·09587
42	·01417	·01081	·01067	·00987	77	·11111	·11326	·11686	·10479
43	·01458	·01113	·01099	·01023	78	·11459	·12295	·12638	·11462
44	·01480	·01154	·01140	·01061	79	·12026	·13350	·13679	·12541

NOTE.—The above results may generally be depended on to the fifth place of decimals, especially at the younger and middle ages. When more accurate results are required, they may be calculated by the closer approximate formula  $\mu_x = \frac{7(d_{x-1} + d_x) - (d_{x-2} + d_{x+1})}{12l_x}$ .

CONSTANTS.

Rate of Interest per-cent.	$\delta$	$\log_{10} \delta$	$d$	$\log_{10} d$	$v$	$\log_{10} v$
3	·029 5588	2·470 6867	·029 1262	2·464 2810	·970 8738	1·987 1628
4	·031 9830	2·504 9198	·031 4770	2·497 9933	·968 5230	1·986 1099
5	·034 4014	2·536 5764	·033 8164	2·529 1277	·966 1836	1·985 0597
6	·036 8140	2·566 0125	·036 1416	2·558 0132	·963 8551	1·984 0119
7	·039 2207	2·593 5156	·038 4615	2·585 0267	·961 5385	1·982 9667
8	·041 6217	2·619 3195	·040 7674	2·610 3129	·959 2326	1·981 9239
9	·044 0169	2·643 6194	·043 0622	2·634 0962	·956 9378	1·980 8837
10	·046 4064	2·666 5776	·045 3461	2·656 5396	·954 6539	1·979 8460
11	·048 7902	2·688 3322	·047 6190	2·677 7807	·952 3810	1·978 8107
12	·051 1689	2·709 1468	·050 0038	2·702 8154	·950 1162	1·977 8741
13	·053 5426	2·729 0233	·052 4206	2·725 7143	·947 8579	1·977 0162
14	·055 9110	2·748 0709	·054 8741	2·748 6662	·945 6029	1·976 2622

$e = 2·718 281 828$

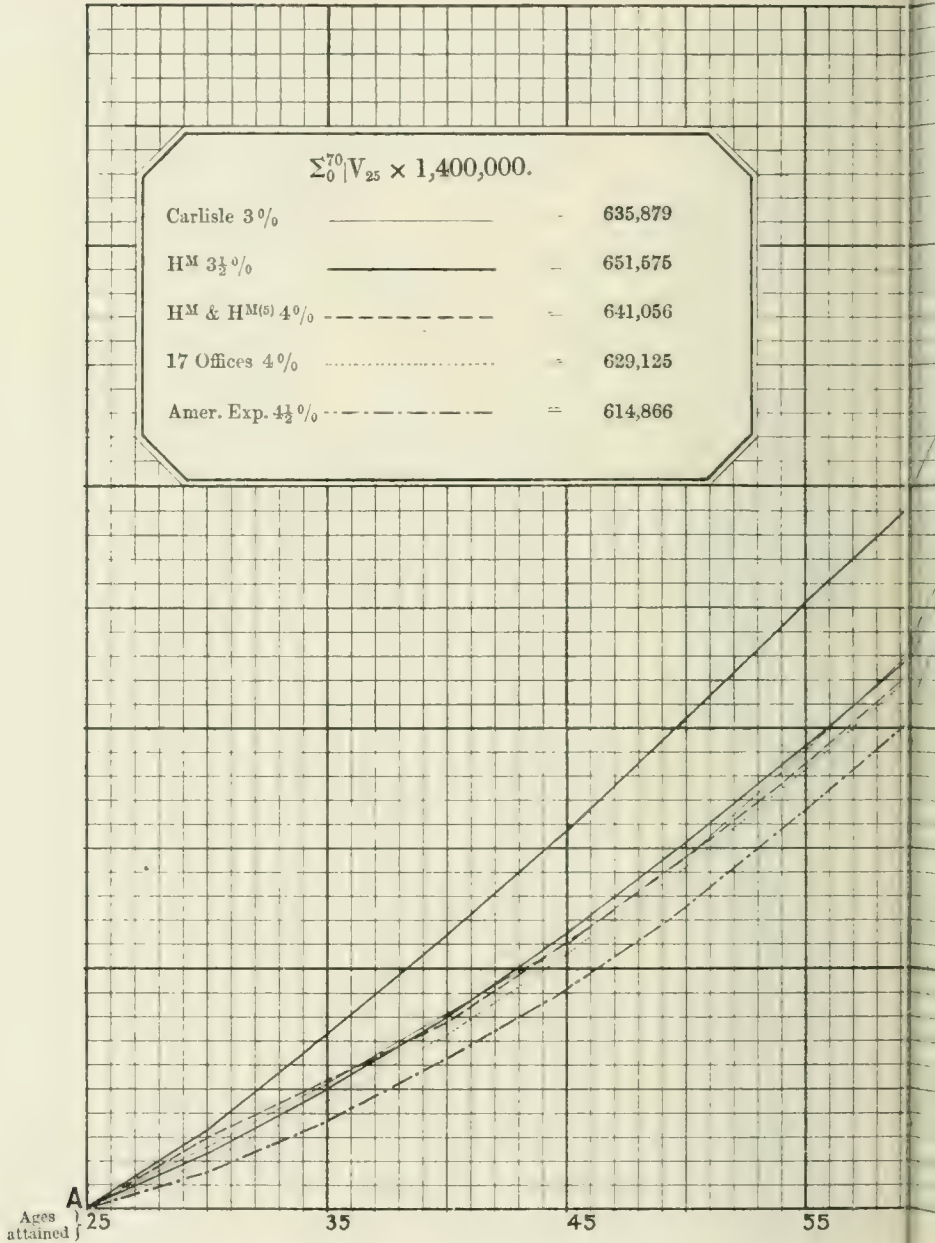
$\log_e 10 = 2·302 585 093$

$\log_{10} e = \frac{1}{\log_e 10} = ·434 294 482 = \text{Modulus of common logarithms.}$



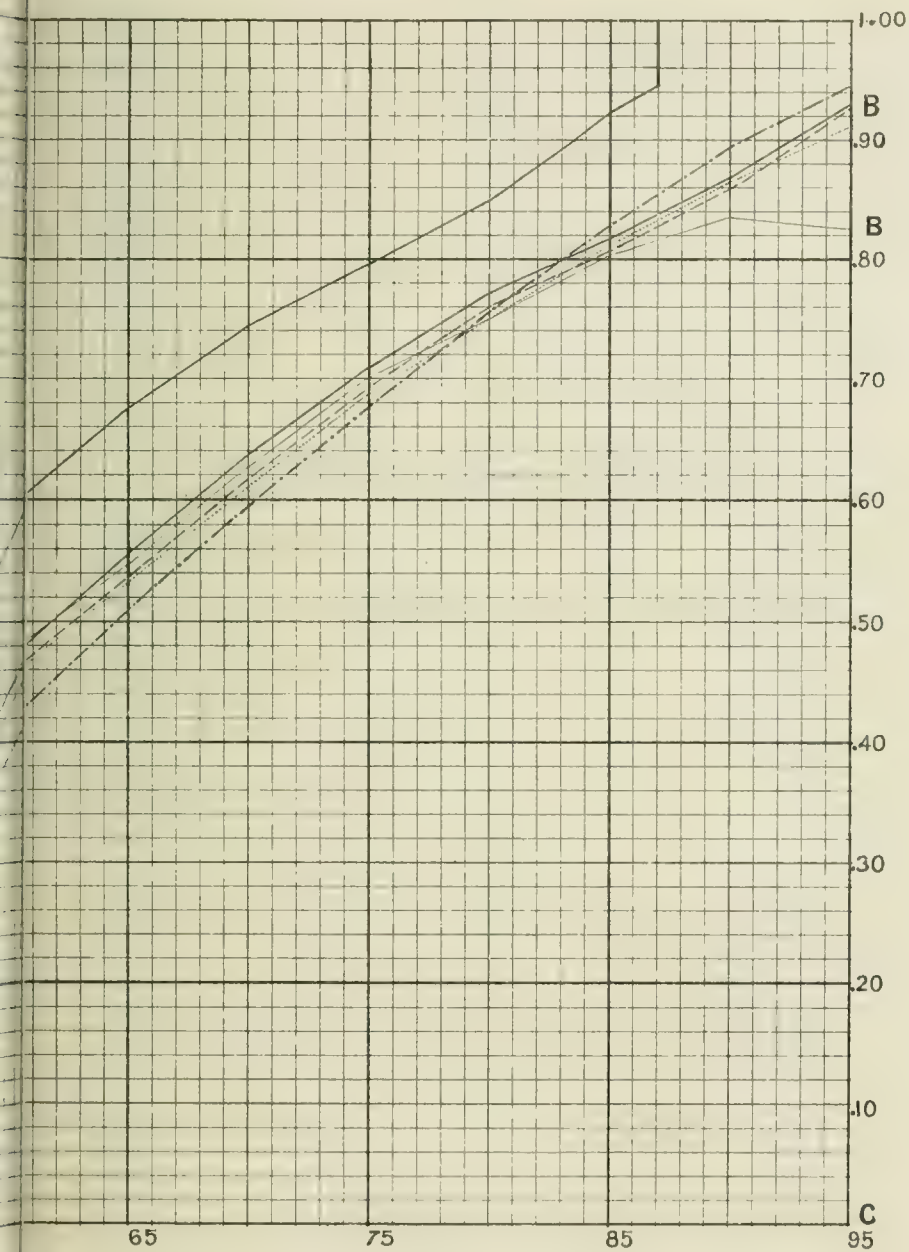
DIAGRAM SHOWING THE AREAS, *A B C*, REPRESENTED BY  $\sum_0^{70}$

INTEREST INDICATED (see “



NOTE.—The abscissæ represent years of duration at the respective

... ACCORDING TO THE SEVERAL TABLES OF MORTALITY AND RATES OF  
 PRODUCTION," Arts. 21-23).



... ages attained, and the ordinates represent the policy-values.

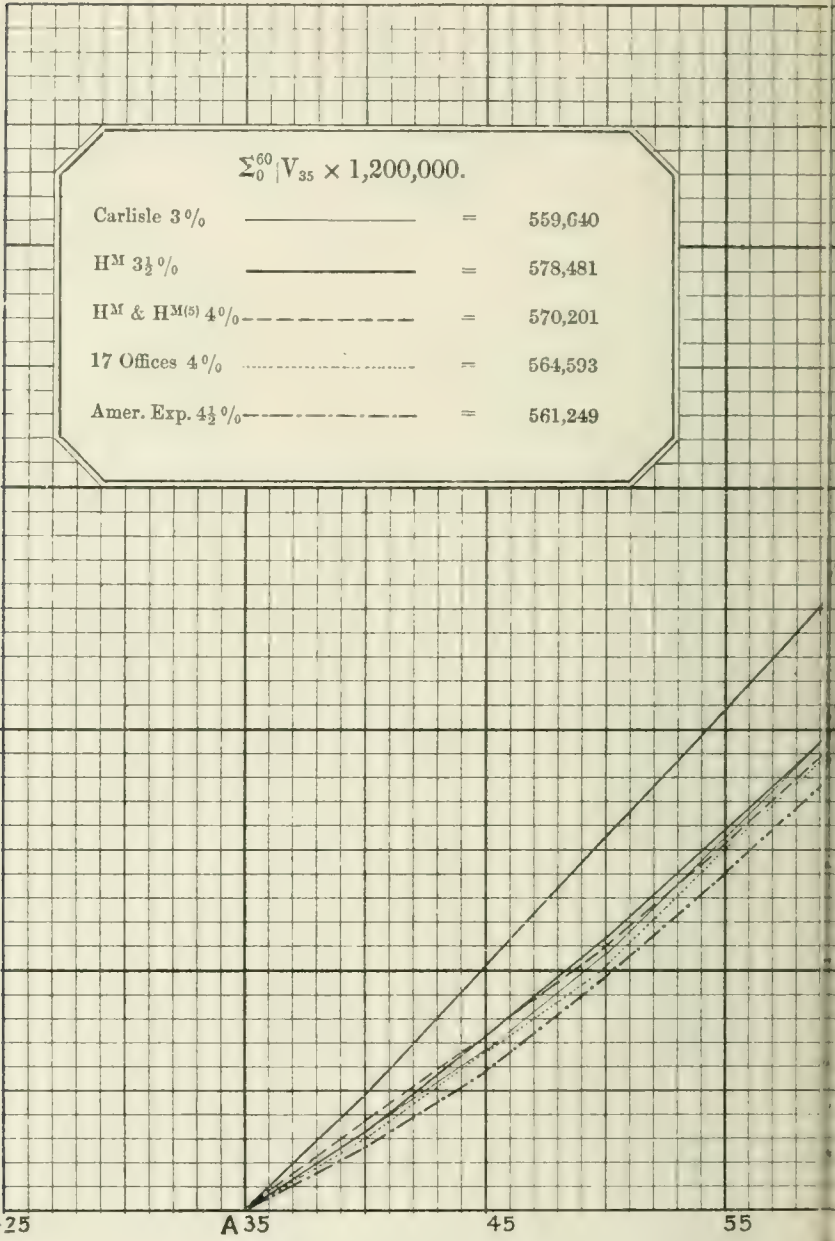






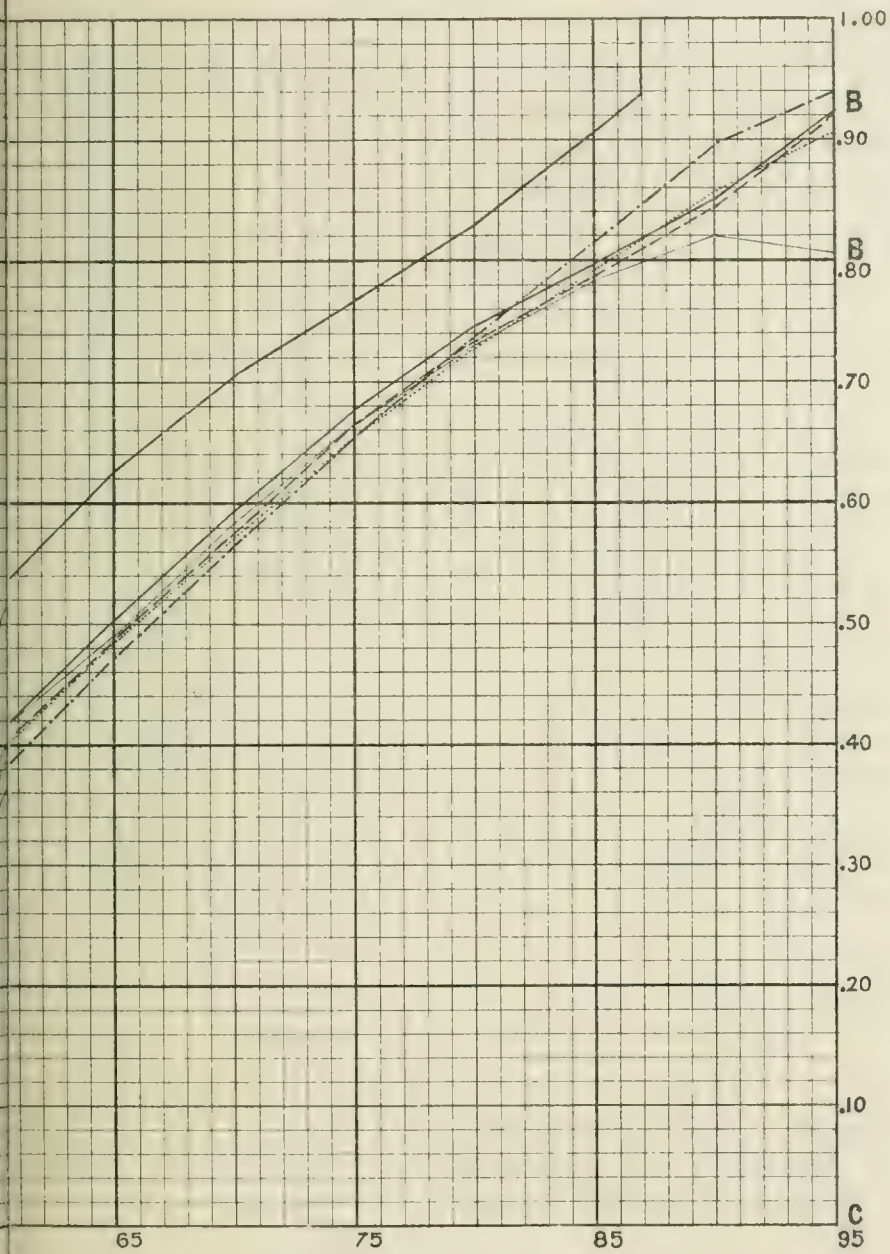
DIAGRAM SHOWING THE AREAS,  $A B C$ , REPRESENTED BY  $\Sigma_0^{60} V_x$

INTEREST INDICATED (see "STANDARD")



NOTE.—The abscissæ represent years of duration at the respective

... ACCORDING TO THE SEVERAL TABLES OF MORTALITY AND RATES OF  
 PRODUCTION," Arts. 21-23).



... the ages attained, and the ordinates represent the policy-values.

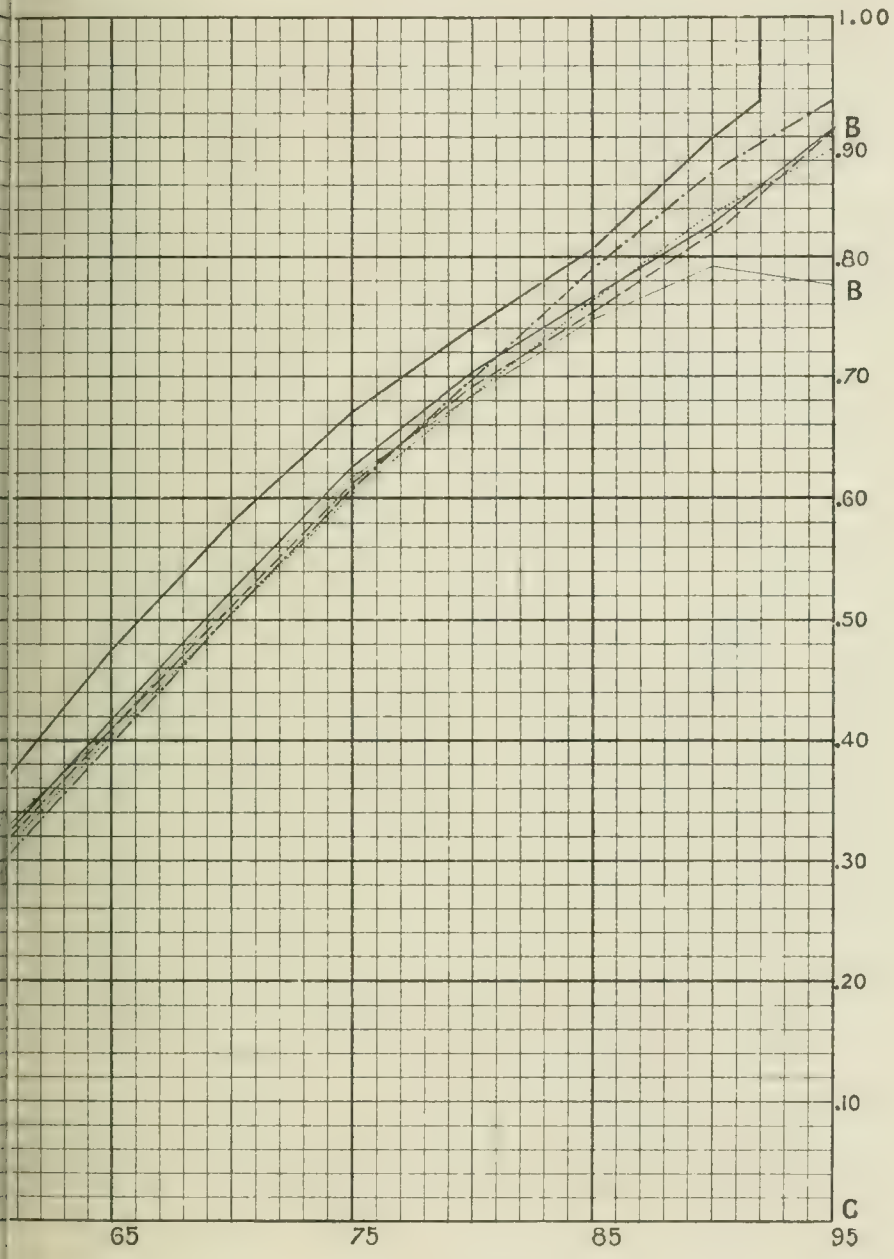








, ACCORDING TO THE SEVERAL TABLES OF MORTALITY AND RATES OF  
 PRODUCTION," *Arts.* 21-23).



the ages attained, and the ordinates represent the policy-values.



# ANNUITY-VALUES.

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CARLISLE,

DAVIES'S EQUITABLE,

SEVENTEEN OFFICES,

ENGLISH, NO. 3, MALES,

INSTITUTE OF ACTUARIES'  $H^M$ ,

INSTITUTE OF ACTUARIES'  $H^{M(5)}$ ,

AMERICAN EXPERIENCE,

THIRTY AMERICAN OFFICES,

DUVILLARD, AND

SPRAGUE'S SELECT-LIFE TABLES ;

ALSO, VALUES OF THE FUNCTIONS  $\varpi_{[x]}$  AND  $A_{[x]}$  ACCORDING TO SPRAGUE'S  
SELECT-LIFE TABLES.

Age.	$a_x$								
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries, H.M.	Institute of Actuaries, H.M.	American Experience.	Thirty American Offices.	Duillard.
10	23'512	23'572	23'356	23'107	24'148	23'562	23'343	23'768	
11	23'327	23'373	23'220	22'935	23'995	23'366	23'225	23'641	
12	23'143	23'168	23'080	22'743	23'814	23'150	23'103	23'509	
13	22'957	22'965	22'936	22'537	23'610	22'916	22'977	23'373	
14	22'769	22'755	22'787	22'323	23'390	22'673	22'846	23'233	
15	22'582	22'548	22'633	22'105	23'158	22'425	22'712	23'088	
16	22'404	22'341	22'475	21'887	22'922	22'173	22'573	22'939	
17	22'232	22'137	22'313	21'671	22'686	21'925	22'430	22'784	
18	22'059	21'934	22'146	21'460	22'458	21'682	22'282	22'625	
19	21'880	21'733	21'974	21'257	22'243	21'455	22'129	22'460	
20	21'695	21'534	21'797	21'061	22'043	21'248	21'971	22'290	
21	21'505	21'329	21'616	20'874	21'848	21'069	21'808	22'115	
22	21'305	21'117	21'430	20'684	21'656	20'913	21'640	21'935	
23	21'099	20'906	21'239	20'490	21'460	20'764	21'467	21'749	
24	20'886	20'689	21'043	20'293	21'254	20'619	21'289	21'558	
25	20'666	20'473	20'842	20'091	21'038	20'469	21'104	21'360	
26	20'443	20'250	20'635	19'885	20'814	20'307	20'914	21'157	
27	20'213	20'028	20'423	19'675	20'582	20'129	20'718	20'948	
28	19'982	19'807	20'205	19'460	20'347	19'941	20'516	20'732	
29	19'762	19'587	19'982	19'239	20'109	19'741	20'308	20'511	
30	19'557	19'368	19'754	19'014	19'867	19'527	20'093	20'283	
31	19'349	19'142	19'519	18'784	19'623	19'300	19'872	20'049	
32	19'135	18'917	19'279	18'549	19'373	19'063	19'644	19'809	
33	18'911	18'694	19'032	18'308	19'117	18'818	19'408	19'562	
34	18'679	18'463	18'780	18'062	18'855	18'563	19'167	19'309	
35	18'434	18'225	18'521	17'811	18'587	18'302	18'917	19'049	
36	18'183	17'988	18'255	17'554	18'314	18'042	18'661	18'783	
37	17'929	17'743	17'983	17'292	18'037	17'777	18'397	18'510	
38	17'669	17'499	17'703	17'025	17'756	17'509	18'125	18'231	
39	17'405	17'247	17'417	16'752	17'469	17'236	17'847	17'945	
40	17'142	16'987	17'123	16'474	17'176	16'954	17'560	17'652	
41	16'889	16'718	16'821	16'192	16'876	16'662	17'266	17'354	
42	16'639	16'441	16'512	15'904	16'560	16'358	16'963	17'049	
43	16'388	16'154	16'195	15'611	16'248	16'047	16'653	16'737	
44	16'130	15'860	15'870	15'313	15'924	15'726	16'335	16'420	
45	15'863	15'576	15'540	15'010	15'594	15'399	16'009	16'096	
46	15'584	15'277	15'204	14'703	15'260	15'069	15'676	15'767	
47	15'293	14'967	14'804	14'390	14'923	14'736	15'335	15'432	
48	14'980	14'655	14'519	14'073	14'585	14'400	14'987	15'092	
49	14'653	14'340	14'171	13'751	14'242	14'062	14'632	14'746	
50	14'302	14'022	13'820	13'424	13'806	13'724	14'271	14'396	
51	13'932	13'708	13'465	13'003	13'545	13'381	13'905	14'041	
52	13'558	13'400	13'107	12'704	13'188	13'036	13'533	13'682	
53	13'180	13'096	12'747	12'432	12'826	12'684	13'157	13'319	
54	12'798	12'799	12'385	12'096	12'462	12'330	12'777	12'952	



Age.	$U_x$								
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' I.M.	Institute of Actuaries' H.M(S).	American Experience.	Thirty American Offices.	Duvillard.
55	12'409	12'493	12'021	11'757	12'094	11'971	12'393	12'582	
56	12'014	12'185	11'656	11'415	11'724	11'610	12'006	12'210	
57	11'614	11'870	11'290	11'069	11'353	11'246	11'617	11'835	
58	11'218	11'566	10'923	10'720	10'981	10'882	11'227	11'458	
59	10'841	11'254	10'555	10'370	10'608	10'514	10'835	11'081	
60	10'491	10'942	10'188	10'018	10'236	10'145	10'443	10'702	
61	10'181	10'621	9'822	9'665	9'866	9'780	10'051	10'324	
62	9'875	10'291	9'457	9'313	9'498	9'416	9'660	9'946	
63	9'567	9'959	9'096	8'961	9'134	9'057	9'272	9'568	
64	9'246	9'626	8'737	8'612	8'774	8'702	8'885	9'193	
65	8'917	9'292	8'382	8'266	8'418	8'353	8'502	8'820	
66	8'578	8'958	8'032	7'923	8'064	8'006	8'123	8'449	
67	8'228	8'623	7'686	7'586	7'712	7'660	7'750	8'082	
68	7'868	8'288	7'347	7'254	7'360	7'313	7'381	7'720	
69	7'499	7'955	7'013	6'928	7'007	6'967	7'020	7'361	
70	7'123	7'624	6'685	6'610	6'657	6'618	6'666	7'009	
71	6'736	7'288	6'364	6'299	6'311	6'274	6'319	6'662	
72	6'372	6'956	6'049	5'997	5'975	5'938	5'981	6'321	
73	6'043	6'621	5'742	5'704	5'653	5'616	5'651	5'987	
74	5'752	6'292	5'441	5'419	5'348	5'311	5'328	5'661	
75	5'512	5'964	5'148	5'145	5'061	5'026	5'011	5'343	
76	5'277	5'627	4'863	4'880	4'782	4'749	4'699	5'032	
77	5'059	5'293	4'585	4'624	4'512	4'484	4'392	4'731	
78	4'838	4'952	4'315	4'379	4'249	4'222	4'088	4'438	
79	4'592	4'616	4'053	4'144	3'992	3'968	3'790	4'155	
80	4'365	4'290	3'799	3'919	3'742	3'724	3'496	3'881	
81	4'119	3'978	3'553	3'704	3'507	3'491	3'209	3'616	
82	3'898	3'680	3'312	3'499	3'290	3'274	2'928	3'360	
83	3'672	3'405	3'077	3'303	3'089	3'074	2'652	3'114	
84	3'454	3'154	2'846	3'116	2'908	2'888	2'379	2'876	
85	3'229	2'930	2'617	2'939	2'739	2'714	2'107	2'646	
86	3'033	2'735	2'391	2'770	2'570	2'539	1'839	2'422	
87	2'873	2'565	2'167	2'610	2'393	2'352	1'579	2'201	
88	2'776	2'404	1'946	2'459	2'206	2'158	1'334	1'983	
89	2'665	2'233	1'728	2'315	1'987	1'938	1'103	1'758	
90	2'499	2'008	1'516	2'179	1'740	1'698	'880	1'560	
91	2'481	1'744	1'309	2'050	1'487	1'437	'663	1'391	
92	2'577	1'445	1'109	1'928	1'229	1'174	'459	1'234	
93	2'687	1'143	'921	1'813	'951	'887	'294	1'083	
94	2'736	'839	'748	1'704	'677	'628	'139	'940	
95	2'757	'536	'592	1'601	'415	'353	...	'800	
96	2'704	'243	'468	1'504	'178	...	...	'649	
97	2'559	...	'371	1'413	...	...	...	'514	
98	2'388	...	'243	1'326	...	...	...	'324	
99	2'131	...	...	1'244	...	...	...	...	

3½%.

x	u <sub>x</sub>								
	Age.	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> (s).	American Experience.	Thirty American Offices.
10	21'395	21'457	21'253	21'070	21'954	21'458	21'225	21'602	
11	21'243	21'294	21'147	20'931	21'834	21'299	21'133	21'504	
12	21'093	21'125	21'036	20'773	21'689	21'120	21'038	21'402	
13	20'941	20'958	20'922	20'604	21'523	20'925	20'940	21'296	
14	20'787	20'785	20'804	20'426	21'341	20'721	20'839	21'187	
15	20'634	20'612	20'682	20'244	21'149	20'512	20'733	21'073	
16	20'490	20'442	20'555	20'061	20'953	20'299	20'624	20'956	
17	20'350	20'272	20'424	19'881	20'757	20'089	20'510	20'833	
18	20'209	20'104	20'290	19'705	20'567	19'884	20'393	20'707	
19	20'063	19'938	20'151	19'535	20'389	19'693	20'271	20'576	
20	19'912	19'773	20'007	19'373	20'225	19'520	20'144	20'440	
21	19'755	19'602	19'860	19'219	20'066	19'373	20'013	20'299	
22	19'589	19'425	19'708	19'061	19'909	19'246	19'878	20'154	
23	19'418	19'249	19'551	18'900	19'748	19'127	19'738	20'003	
24	19'240	19'067	19'389	18'736	19'578	19'010	19'592	19'848	
25	19'056	18'885	19'223	18'567	19'399	18'891	19'442	19'687	
26	18'868	18'697	19'052	18'395	19'212	18'760	19'286	19'520	
27	18'673	18'510	18'875	18'218	19'018	18'614	19'124	19'348	
28	18'478	18'323	18'693	18'037	18'820	18'459	18'957	19'170	
29	18'293	18'137	18'506	17'851	18'620	18'292	18'784	18'986	
30	18'121	17'952	18'314	17'660	18'416	18'113	18'605	18'797	
31	17'947	17'760	18'116	17'464	18'209	17'921	18'420	18'602	
32	17'766	17'569	17'912	17'263	17'996	17'720	18'229	18'400	
33	17'576	17'379	17'703	17'057	17'778	17'512	18'030	18'192	
34	17'376	17'182	17'487	16'845	17'554	17'293	17'826	17'979	
35	17'169	16'978	17'265	16'629	17'325	17'069	17'614	17'758	
36	16'954	16'774	17'037	16'407	17'090	16'845	17'395	17'532	
37	16'734	16'564	16'802	16'180	16'850	16'617	17'169	17'299	
38	16'510	16'353	16'561	15'947	16'607	16'384	16'935	17'060	
39	16'281	16'134	16'312	15'709	16'358	16'148	16'695	16'814	
40	16'053	15'908	16'055	15'466	16'103	15'902	16'446	16'562	
41	15'834	15'674	15'791	15'218	15'840	15'647	16'190	16'304	
42	15'617	15'431	15'519	14'964	15'568	15'380	15'926	16'039	
43	15'400	15'179	15'240	14'706	15'288	15'105	15'654	15'768	
44	15'174	14'925	14'952	14'442	15'001	14'821	15'374	15'490	
45	14'941	14'668	14'658	14'172	14'707	14'530	15'087	15'207	
46	14'697	14'402	14'360	13'898	14'410	14'235	14'791	14'917	
47	14'440	14'126	14'055	13'619	14'110	13'938	14'488	14'622	
48	14'167	13'847	13'747	13'334	13'806	13'636	14'177	14'321	
49	13'870	13'565	13'434	13'045	13'499	13'333	13'859	14'015	
50	13'554	13'279	13'116	12'750	13'187	13'028	13'535	13'703	
51	13'220	12'996	12'795	12'449	12'870	12'719	13'204	13'387	
52	12'881	12'718	12'471	12'151	12'547	12'405	12'868	13'066	
53	12'537	12'444	12'143	11'849	12'218	12'085	12'526	12'740	
54	12'189	12'176	11'813	11'543	11'885	11'762	12'180	12'411	

x	u <sub>x</sub>								
	Age.	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' I <sup>M</sup> .	Institute of Actuaries' I <sup>M</sup> (s).	American Experience.	Thirty American Offices.
55	11'833	11'898	11'480	11'233	11'549	11'434	11'830	12'078	
56	11'470	11'618	11'145	10'919	11'210	11'103	11'475	11'742	
57	11'102	11'337	10'808	10'600	10'868	10'768	11'118	11'403	
58	10'735	11'053	10'469	10'279	10'525	10'432	10'758	11'062	
59	10'387	10'768	10'129	9'954	10'180	10'092	10'396	10'720	
60	10'063	10'481	9'788	9'628	9'835	9'750	10'032	10'270	
61	9'776	10'186	9'448	9'299	9'490	9'410	9'668	9'919	
62	9'494	9'881	9'108	8'971	9'148	9'071	9'304	9'567	
63	9'208	9'574	8'770	8'644	8'807	8'735	8'941	9'216	
64	8'909	9'265	8'434	8'315	8'471	8'402	8'579	8'865	
65	8'603	8'954	8'101	7'989	8'136	8'075	8'219	8'515	
66	8'286	8'641	7'771	7'667	7'803	7'748	7'863	8'168	
67	7'956	8'328	7'445	7'348	7'471	7'422	7'510	7'822	
68	7'617	8'014	7'124	7'034	7'139	7'094	7'162	7'480	
69	7'268	7'701	6'808	6'725	6'804	6'765	6'819	7'141	
70	6'911	7'389	6'497	6'423	6'470	6'434	6'482	6'807	
71	6'542	7'072	6'191	6'127	6'141	6'106	6'152	6'477	
72	6'195	6'758	5'891	5'839	5'820	5'784	5'830	6'153	
73	5'880	6'440	5'597	5'558	5'512	5'476	5'514	5'834	
74	5'602	6'127	5'310	5'286	5'220	5'184	5'205	5'522	
75	5'372	5'813	5'029	5'023	4'945	4'911	4'900	5'217	
76	5'148	5'492	4'755	4'660	4'676	4'644	4'600	4'919	
77	4'939	5'171	4'488	4'523	4'416	4'390	4'304	4'629	
78	4'728	4'843	4'228	4'286	4'162	4'136	4'011	4'347	
79	4'491	4'520	3'975	4'060	3'914	3'891	3'722	4'073	
80	4'272	4'204	3'729	3'842	3'672	3'655	3'437	3'808	
81	4'034	3'903	3'490	3'634	3'444	3'428	3'158	3'551	
82	3'821	3'613	3'256	3'435	3'233	3'217	2'884	3'303	
83	3'602	3'346	3'028	3'245	3'038	3'023	2'615	3'064	
84	3'390	3'102	2'803	3'063	2'862	2'843	2'348	2'832	
85	3'171	2'884	2'580	2'891	2'698	2'674	2'082	2'607	
86	2'980	2'694	2'359	2'727	2'534	2'503	1'819	2'389	
87	2'824	2'529	2'140	2'570	2'361	2'321	1'563	2'173	
88	2'729	2'372	1'923	2'423	2'178	2'132	1'322	1'959	
89	2'620	2'206	1'709	2'282	1'964	1'917	1'094	1'738	
90	2'457	1'986	1'500	2'149	1'722	1'680	'874	1'543	
91	2'439	1'726	1'296	2'023	1'473	1'424	'658	1'377	
92	2'534	1'432	1'100	1'904	1'219	1'164	'457	1'223	
93	2'642	1'134	'914	1'791	'944	'881	'292	1'073	
94	2'692	'833	'742	1'583	'673	'624	'138	'932	
95	2'715	'533	'588	1'488	'413	'351	...	'794	
96	2'665	'242	'465	1'398	'178	...	...	'644	
97	2'525	...	'369	1'312	...	...	...	'511	
98	2'360	...	'242	1'232	...	...	...	'322	
99	2'109	...	...	1'156	...	...	...	...	

<i>x</i>	<i>a<sub>x</sub></i>								
	Age.	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries, H.M.	Institute of Actuaries, H.Mel.	American Experience.	Thirty American Offices.
10	19'583	19'647	19'454	19'321	20'077	19'656	19'414	19'732	17'882
11	19'459	19'512	19'369	19'207	19'982	19'524	19'343	19'655	17'742
12	19'335	19'371	19'282	19'077	19'865	19'374	19'269	19'575	17'596
13	19'209	19'232	19'191	18'936	19'728	19'211	19'192	19'491	17'449
14	19'082	19'087	19'096	18'786	19'578	19'038	19'112	19'404	17'301
15	18'955	18'944	18'998	18'633	19'417	18'859	19'028	19'314	17'154
16	18'836	18'801	18'896	18'479	19'252	18'678	18'942	19'220	17'009
17	18'722	18'659	18'790	18'327	19'087	18'499	18'852	19'122	16'865
18	18'607	18'519	18'681	18'179	18'928	18'324	18'757	19'020	16'723
19	18'486	18'380	18'567	18'037	18'780	18'161	18'660	18'913	16'582
20	18'362	18'242	18'451	17'901	18'644	18'015	18'558	18'803	16'442
21	18'232	18'099	18'329	17'772	18'513	17'893	18'452	18'688	16'303
22	18'094	17'950	18'204	17'641	18'384	17'790	18'342	18'569	16'164
23	17'950	17'802	18'075	17'507	18'251	17'694	18'228	18'445	16'026
24	17'801	17'648	17'941	17'369	18'110	17'601	18'109	18'316	15'887
25	17'645	17'494	17'803	17'228	17'961	17'505	17'985	18'183	15'747
26	17'486	17'334	17'660	17'082	17'804	17'399	17'857	18'044	15'606
27	17'320	17'175	17'512	16'933	17'641	17'279	17'723	17'900	15'463
28	17'154	17'016	17'360	16'779	17'474	17'151	17'585	17'751	15'318
29	16'997	16'858	17'202	16'621	17'304	17'011	17'440	17'596	15'171
30	16'852	16'701	17'040	16'459	17'131	16'861	17'291	17'436	15'021
31	16'705	16'537	16'872	16'291	16'955	16'698	17'135	17'271	14'868
32	16'552	16'374	16'698	16'119	16'774	16'527	16'974	17'099	14'710
33	16'391	16'211	16'520	15'941	16'587	16'348	16'806	16'921	14'549
34	16'219	16'042	16'335	15'759	16'395	16'161	16'632	16'738	14'384
35	16'041	15'867	16'144	15'572	16'197	15'967	16'451	16'548	14'214
36	15'856	15'691	15'948	15'379	15'994	15'773	16'263	16'353	14'039
37	15'666	15'509	15'744	15'181	15'786	15'576	16'069	16'151	13'859
38	15'471	15'326	15'534	14'978	15'575	15'374	15'868	15'942	13'673
39	15'272	15'137	15'317	14'770	15'358	15'168	15'659	15'728	13'482
40	15'074	14'939	15'093	14'556	15'135	14'953	15'443	15'507	13'286
41	14'883	14'734	14'861	14'337	14'904	14'729	15'220	15'279	13'083
42	14'695	14'520	14'621	14'113	14'664	14'494	14'988	15'045	12'875
43	14'505	14'297	14'374	13'884	14'417	14'250	14'749	14'805	12'662
44	14'309	14'072	14'119	13'649	14'162	13'998	14'503	14'558	12'442
45	14'105	13'845	13'857	13'409	13'901	13'738	14'248	14'305	12'218
46	13'889	13'608	13'590	13'164	13'635	13'475	13'985	14'046	11'987
47	13'662	13'361	13'317	12'913	13'366	13'208	13'714	13'781	11'752
48	13'419	13'111	13'039	12'657	13'094	12'937	13'436	13'509	11'511
49	13'153	12'857	12'757	12'396	12'817	12'664	13'151	13'232	11'266
50	12'869	12'599	12'470	12'129	12'536	12'388	12'858	12'949	11'016
51	12'566	12'344	12'179	11'857	12'249	12'108	12'560	12'661	10'762
52	12'258	12'092	11'884	11'585	11'955	11'823	12'255	12'367	10'504
53	11'945	11'844	11'585	11'310	11'655	11'532	11'944	12'068	10'242
54	11'627	11'601	11'283	11'030	11'351	11'237	11'628	11'765	9'977



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Age.	$a_x$								
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3. Males.	Institute of Actuaries H.M.	Institute of Actuaries H.M.S.	American Experience.	Thirty American Offices.	Duillard.
55	11'300	11'349	10'978	10'746	11'043	10'936	11'307	11'457	9'709
56	10'966	11'094	10'670	10'457	10'731	10'632	10'982	11'145	9'439
57	10'626	10'837	10'359	10'164	10'417	10'323	10'653	10'830	9'167
58	10'286	10'577	10'046	9'867	10'100	10'012	10'321	10'511	8'893
59	9'963	10'316	9'731	9'566	9'780	9'697	9'986	10'189	8'618
60	9'663	10'052	9'415	9'262	9'459	9'379	9'648	9'865	8'342
61	9'398	9'780	9'098	8'957	9'138	9'063	9'309	9'540	8'065
62	9'137	9'498	8'780	8'649	8'818	8'746	8'970	9'213	7'789
63	8'872	9'213	8'464	8'342	8'500	8'431	8'630	8'884	7'513
64	8'593	8'925	8'149	8'034	8'185	8'120	8'290	8'556	7'238
65	8'307	8'635	7'835	7'728	7'870	7'812	7'952	8'228	6'965
66	8'010	8'343	7'525	7'424	7'557	7'504	7'616	7'901	6'693
67	7'700	8'050	7'217	7'123	7'243	7'196	7'282	7'576	6'424
68	7'380	7'755	6'913	6'825	6'928	6'886	6'953	7'253	6'157
69	7'049	7'461	6'613	6'532	6'610	6'574	6'627	6'932	5'894
70	6'709	7'167	6'317	6'245	6'293	6'258	6'307	6'614	5'635
71	6'358	6'867	6'026	5'963	5'979	5'945	5'993	6'301	5'380
72	6'025	6'569	5'740	5'688	5'672	5'638	5'685	5'992	5'130
73	5'725	6'266	5'459	5'419	5'377	5'343	5'383	5'687	4'886
74	5'458	5'969	5'184	5'159	5'097	5'062	5'086	5'389	4'649
75	5'239	5'670	4'915	4'906	4'833	4'800	4'794	5'096	4'420
76	5'024	5'362	4'651	4'661	4'574	4'543	4'505	4'810	4'200
77	4'825	5'054	4'394	4'425	4'324	4'298	4'219	4'531	3'990
78	4'622	4'739	4'143	4'197	4'079	4'054	3'936	4'259	3'794
79	4'393	4'426	3'899	3'978	3'838	3'816	3'656	3'994	3'612
80	4'183	4'121	3'661	3'767	3'604	3'587	3'380	3'738	3'450
81	3'953	3'830	3'429	3'566	3'382	3'368	3'108	3'489	3'311
82	3'746	3'549	3'203	3'373	3'178	3'163	2'842	3'248	3'200
83	3'534	3'289	2'980	3'188	2'989	2'974	2'580	3'015	3'125
84	3'329	3'051	2'761	3'012	2'818	2'799	2'318	2'789	3'092
85	3'115	2'839	2'544	2'844	2'658	2'634	2'057	2'570	3'105
86	2'928	2'654	2'328	2'684	2'498	2'469	1'799	2'357	3'162
87	2'776	2'493	2'114	2'532	2'330	2'291	1'548	2'146	3'233
88	2'683	2'341	1'901	2'388	2'152	2'106	1'310	1'936	3'249
89	2'577	2'179	1'691	2'250	1'942	1'895	1'085	1'719	3'089
90	2'416	1'963	1'485	2'120	1'704	1'663	867	1'527	2'930
91	2'398	1'709	1'284	1'997	1'459	1'411	654	1'364	2'773
92	2'492	1'419	1'090	1'880	1'208	1'155	454	1'211	2'617
93	2'600	1'125	906	1'709	937	874	291	1'064	2'464
94	2'650	828	737	1'664	668	621	137	924	2'313
95	2'674	530	584	1'565	411	350	...	788	2'163
96	2'628	240	462	1'471	177	...	...	640	2'013
97	2'492	...	367	1'383	...	...	...	508	1'874
98	2'332	...	240	1'299	...	...	...	321	1'733
99	2'087	...	...	1'220	...	...	...	...	1'595



<i>x</i>	<i>a<sub>x</sub></i>								
	Age.	Carlisle	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H <sup>M</sup> .	Institute of Actuaries' H <sup>M</sup> (s).	American Experience.	Thirty American Offices.
10	18'023	18'086	17'902	17'809	18'459	18'100	17'855	18'133	
11	17'919	17'974	17'835	17'716	18'385	17'990	17'800	18'073	
12	17'816	17'856	17'765	17'607	18'289	17'864	17'741	18'010	
13	17'711	17'739	17'692	17'488	18'176	17'725	17'681	17'944	
14	17'604	17'617	17'616	17'361	18'049	17'577	17'617	17'875	
15	17'499	17'495	17'536	17'231	17'914	17'424	17'551	17'802	
16	17'400	17'375	17'453	17'100	17'774	17'267	17'482	17'727	
17	17'306	17'256	17'367	16'971	17'634	17'113	17'410	17'648	
18	17'211	17'137	17'278	16'845	17'499	16'962	17'334	17'566	
19	17'111	17'020	17'185	16'724	17'375	16'822	17'255	17'480	
20	17'007	16'905	17'089	16'610	17'262	16'698	17'173	17'390	
21	16'899	16'784	16'989	16'503	17'153	16'596	17'087	17'296	
22	16'783	16'657	16'885	16'317	17'047	16'512	16'997	17'198	
23	16'662	16'532	16'778	16'280	16'937	16'434	16'903	17'096	
24	16'535	16'400	16'666	16'163	16'819	16'360	16'806	16'990	
25	16'403	16'270	16'551	16'037	16'694	16'283	16'704	16'879	
26	16'267	16'133	16'431	15'921	16'561	16'197	16'597	16'763	
27	16'125	15'997	16'307	15'794	16'423	16'098	16'486	16'643	
28	15'983	15'861	16'178	15'663	16'281	15'991	16'371	16'518	
29	15'849	15'725	16'045	15'528	16'137	15'874	16'250	16'388	
30	15'726	15'591	15'907	15'389	15'989	15'747	16'124	16'253	
31	15'602	15'450	15'764	15'245	15'839	15'608	15'993	16'112	
32	15'472	15'310	15'616	15'097	15'684	15'462	15'856	15'966	
33	15'334	15'171	15'463	14'943	15'523	15'308	15'713	15'815	
34	15'186	15'025	15'304	14'785	15'358	15'146	15'565	15'658	
35	15'032	14'873	15'139	14'623	15'186	14'979	15'410	15'495	
36	14'872	14'721	14'969	14'455	15'010	14'811	15'249	15'326	
37	14'707	14'563	14'792	14'282	14'830	14'639	15'081	15'151	
38	14'537	14'404	14'609	14'104	14'645	14'463	14'907	14'970	
39	14'363	14'238	14'419	13'921	14'455	14'283	14'725	14'783	
40	14'190	14'065	14'223	13'732	14'260	14'095	14'537	14'590	
41	14'023	13'885	14'018	13'539	14'056	13'898	14'341	14'390	
42	13'859	13'696	13'806	13'340	13'845	13'689	14'138	14'184	
43	13'694	13'498	13'586	13'136	13'625	13'473	13'928	13'972	
44	13'522	13'298	13'359	12'927	13'398	13'248	13'709	13'754	
45	13'343	13'096	13'126	12'712	13'165	13'016	13'483	13'529	
46	13'153	12'884	12'886	12'492	12'927	12'780	13'248	13'298	
47	12'951	12'663	12'641	12'267	12'686	12'540	13'007	13'061	
48	12'735	12'438	12'391	12'036	12'441	12'296	12'757	12'818	
49	12'496	12'208	12'135	11'800	12'191	12'049	12'500	12'568	
50	12'239	11'975	11'875	11'558	11'936	11'799	12'236	12'313	
51	11'964	11'744	11'611	11'312	11'676	11'545	11'965	12'052	
52	11'684	11'516	11'342	11'063	11'408	11'286	11'688	11'786	
53	11'398	11'291	11'069	10'811	11'134	11'019	11'405	11'514	
54	11'106	11'070	10'792	10'555	10'856	10'749	11'116	11'237	

Age.	$U_x$								
	Carlisle.	Davies's Equitable.	Seventeen Offices.	English No. 3, Males.	Institute of Actuaries' H <sup>M</sup> .	Institute of Actuaries' H <sup>M(S)</sup> .	American Experience.	Thirty American Offices.	Duvillard.
55	10'806	10'841	10'512	10'294	10'573	10'473	10'822	10'955	
56	10'498	10'608	10'228	10'028	10'286	10'193	10'523	10'669	
57	10'183	10'373	9'941	9'757	9'996	9'908	10'219	10'379	
58	9'868	10'135	9'651	9'482	9'702	9'620	9'912	10'085	
59	9'568	9'894	9'359	9'202	9'405	9'327	9'601	9'787	
60	9'290	9'652	9'064	8'930	9'107	9'032	9'288	9'487	
61	9'044	9'400	8'769	8'634	8'808	8'736	8'972	9'184	
62	8'802	9'138	8'472	8'347	8'509	8'440	8'654	8'879	
63	8'555	8'874	8'176	8'059	8'211	8'145	8'336	8'573	
64	8'296	8'606	7'879	7'770	7'914	7'853	8'017	8'265	
65	8'028	8'335	7'584	7'481	7'619	7'563	7'699	7'957	
66	7'749	8'062	7'291	7'194	7'323	7'273	7'381	7'649	
67	7'457	7'787	7'000	6'909	7'026	6'982	7'066	7'342	
68	7'155	7'510	6'712	6'627	6'728	6'688	6'754	7'037	
69	6'841	7'233	6'428	6'349	6'426	6'391	6'445	6'732	
70	6'518	6'955	6'146	6'075	6'124	6'091	6'140	6'431	
71	6'182	6'671	5'869	5'806	5'824	5'792	5'840	6'132	
72	5'864	6'388	5'596	5'543	5'530	5'498	5'546	5'838	
73	5'576	6'101	5'327	5'286	5'247	5'215	5'257	5'547	
74	5'321	5'817	5'063	5'036	4'979	4'946	4'972	5'261	
75	5'111	5'532	4'805	4'794	4'725	4'693	4'691	4'980	
76	4'906	5'237	4'551	4'558	4'476	4'446	4'413	4'705	
77	4'715	4'941	4'303	4'330	4'235	4'210	4'138	4'436	
78	4'520	4'638	4'061	4'111	3'998	3'974	3'864	4'174	
79	4'300	4'337	3'825	3'908	3'765	3'744	3'593	3'918	
80	4'097	4'042	3'595	3'696	3'539	3'522	3'324	3'670	
81	3'875	3'759	3'370	3'500	3'323	3'309	3'060	3'429	
82	3'675	3'486	3'150	3'313	3'125	3'110	2'801	3'195	
83	3'469	3'233	2'934	3'134	2'941	2'927	2'545	2'968	
84	3'269	3'002	2'720	2'962	2'774	2'756	2'289	2'748	
85	3'061	2'795	2'508	2'799	2'619	2'596	2'033	2'534	
86	2'879	2'615	2'298	2'643	2'464	2'435	1'780	2'326	
87	2'730	2'459	2'088	2'495	2'299	2'262	1'533	2'119	
88	2'639	2'310	1'879	2'354	2'125	2'081	1'298	1'913	
89	2'535	2'153	1'673	2'219	1'920	1'874	1'076	1'700	
90	2'377	1'942	1'471	2'092	1'686	1'646	'861	1'511	
91	2'359	1'692	1'272	1'971	1'446	1'398	'649	1'350	
92	2'451	1'406	1'081	1'857	1'198	1'145	'451	1'200	
93	2'558	1'116	'899	1'748	'930	'868	'289	1'055	
94	2'609	'822	'731	1'645	'664	'617	'137	'917	
95	2'635	'527	'580	1'548	'408	'348	...	'783	
96	2'591	'239	'459	1'455	'176	...	...	'635	
97	2'460	...	'365	1'368	...	...	...	'505	
98	2'305	...	'239	1'286	...	...	...	'319	
99	2'066	...	...	1'208	...	...	...	...	

SPRAGUE'S SELECT-LIFE TABLES.

YEARS ELAPSED SINCE DATE OF INSURANCE.

Age	0	1	2	3	4	5 or more	0	0
$x$	$a_x$	$a_{x-1}+1$	$a_{x-2}+2$	$a_{x-3}+3$	$a_{x-4}+4$	$a_x$	$\bar{a}_x$	$\Delta_x$
15	22'1304	...	...	...	...	22'4247	'013554	'317566
16	22'1745	22'1728	...	...	...	22'1728	'014025	'325016
17	21'9268	21'9245	21'9245	...	...	21'9245	'014491	'332233
18	21'7010	21'6821	21'6821	21'6821	...	21'6821	'014925	'338809
19	21'5030	21'4576	21'4549	21'4549	21'4549	21'4549	'015313	'341577
20	21'3421	21'2593	21'2481	21'2481	21'2481	21'2481	'015632	'349260
21	21'2301	21'0928	21'0692	21'0692	21'0692	21'0692	'015858	'352517
22	21'1082	20'9740	20'9129	20'9129	20'9129	20'9129	'016106	'356076
23	20'9732	20'8452	20'7828	20'7641	20'7641	20'7641	'016384	'360007
24	20'8260	20'7033	20'6431	20'6230	20'6185	20'6185	'016691	'364293
25	20'6667	20'5491	20'4906	20'4718	20'4694	20'4694	'017028	'368944
26	20'4928	20'3829	20'3262	20'3074	20'3074	20'3074	'017401	'374000
27	20'3044	20'2022	20'1502	20'1314	20'1292	20'1292	'017813	'379487
28	20'1032	20'0068	19'9601	19'9438	19'9414	19'9414	'018260	'385311
29	19'8928	19'7987	19'7557	19'7426	19'7409	19'7409	'018737	'391474
30	19'6706	19'5814	19'5389	19'5273	19'5273	19'5273	'019252	'397945
31	19'4396	19'3523	19'3132	19'3002	19'2999	19'2999	'019799	'404681
32	19'2129	19'1144	19'0760	19'0647	19'0629	19'0629	'020348	'411288
33	18'9774	18'8812	18'8301	18'8182	18'8182	18'8182	'020931	'418137
34	18'7380	18'6391	18'5897	18'5633	18'5633	18'5633	'021537	'425103
35	18'4907	18'3933	18'3404	18'3149	18'3022	18'3022	'022181	'432316
36	18'2359	18'1392	18'0875	18'0579	18'0451	18'0447	'022860	'439734
37	17'9728	17'8775	17'8261	17'7976	17'7824	17'7773	'023581	'447394
38	17'7011	17'6072	17'5571	17'5287	17'5160	17'5087	'024346	'455305
39	17'4207	17'3280	17'2792	17'2522	17'2401	17'2356	'025161	'463480
40	17'1317	17'0400	16'9925	16'9666	16'9560	16'9536	'026025	'471885
41	16'8372	16'7432	16'6967	16'6721	16'6621	16'6621	'026936	'480471
42	16'5373	16'4408	16'3918	16'3685	16'3589	16'3584	'027895	'489204
43	16'2324	16'1330	16'0815	16'0558	16'0470	16'0465	'028904	'498087
44	15'9253	15'8201	15'7658	15'7378	15'7267	15'7260	'029957	'507034
45	15'6163	15'5050	15'4451	15'4145	15'4020	15'3987	'031056	'516032
46	15'3033	15'1884	15'1226	15'0865	15'0728	15'0686	'032211	'525147
47	14'9858	14'8678	14'7988	14'7571	14'7396	14'7356	'033429	'534397
48	14'6616	14'5427	14'4712	14'4268	14'4051	14'3995	'034725	'543842
49	14'3330	14'2110	14'1396	14'0934	14'0699	14'0622	'036093	'553410
50	13'9981	13'8751	13'8011	13'7563	13'7317	13'7235	'037549	'563166
51	13'6582	13'5329	13'4594	13'4133	13'3900	13'3814	'039095	'573065
52	13'3136	13'1858	13'1114	13'0668	13'0425	13'0356	'040738	'583103
53	12'9650	12'8341	12'7589	12'7149	12'6923	12'6837	'042482	'593255
54	12'6100	12'4786	12'4022	12'3591	12'3370	12'3296	'044319	'603596
55	12'2498	12'1168	12'0421	11'9998	11'9785	11'9711	'046246	'614082
56	11'8881	11'7499	11'6759	11'6377	11'6170	11'6100	'048265	'624619
57	11'5245	11'3817	11'3051	11'2703	11'2536	11'2462	'050378	'635212
58	11'1617	11'0118	10'9335	10'8989	10'8861	10'8815	'052586	'645782
59	10'8007	10'6430	10'5606	10'5276	10'5160	10'5140	'054891	'656291
60	10'4428	10'2765	10'1895	10'1557	10'1475	10'1454	'057265	'666716
61	10'0888	9'9132	9'8214	9'7868	9'7801	9'7801	'059705	'677028
62	9'7349	9'5544	9'4573	9'4223	9'4164	9'4164	'062209	'687338
63	9'3737	9'1957	9'0983	9'0638	9'0567	9'0567	'064772	'697855
64	9'0097	8'8296	8'7400	8'7121	8'7019	8'7019	'067377	'708458
65	8'6661	8'4605	8'3712	8'3625	8'3531	8'3531	'070028	'718460
66	8'3216	8'1129	8'0055	8'0055	8'0055	8'0055	'072715	'728498
67	7'9769	7'7642	7'6599	7'6599	7'6599	7'6599	'075427	'738539
68	7'6312	7'4153	7'3133	7'3133	7'3133	7'3133	'078152	'748608
69	7'2891	7'0651	6'9665	6'9665	6'9665	6'9665	'080891	'758663
70	6'9555	6'7187	6'6182	6'6182	6'6182	6'6182	'083644	'768290
71	6'6346	6'3804	6'2738	6'2738	6'2738	6'2738	'086411	'777635
72	6'3295	6'0554	5'9377	5'9377	5'9377	5'9377	'089191	'786518
73	6'0424	5'7468	5'6156	5'6156	5'6156	5'6156	'091984	'794882
74	5'7626	5'4569	5'3109	5'3109	5'3109	5'3109	'094791	'802827
75	5'4948	5'1744	5'0261	5'0261	5'0261	5'0261	'097611	'810838
76	5'2388	4'9011	4'7488	4'7488	4'7488	4'7488	'100444	'818888



SPRAGUE'S SELECT-LIFE TABLES.

YEARS ELAPSED SINCE DATE OF INSURANCE.

Age	0	1	2	3	4	5 or more	0	0
$x$	$a_x$	$a_{x-1}+1$	$a_{x-2}+2$	$a_{x-3}+3$	$a_{x-4}+4$	$a_x$	$\bar{w}_x$	$\Lambda_x$
15	20'5163	...	...	...	...	20'5116	012659	272381
16	20'3004	20'2988	...	...	...	20'2988	013131	279701
17	20'0910	20'0889	20'0889	...	...	20'0889	013597	286781
18	19'9011	19'8839	19'8839	19'8839	...	19'8839	014028	293199
19	19'7368	19'6950	19'6926	19'6926	19'6926	19'6926	014407	298760
20	19'6061	19'5302	19'5197	19'5197	19'5197	19'5197	014713	303178
21	19'5202	19'3943	19'3726	19'3726	19'3726	19'3726	014916	306081
22	19'4255	19'3022	19'2462	19'2462	19'2462	19'2462	015142	309288
23	19'3190	19'2014	19'1439	19'1267	19'1267	19'1267	015399	312890
24	19'2014	19'0886	19'0332	19'0145	19'0104	19'0104	015686	316874
25	19'0727	18'9645	18'9106	18'8933	18'8910	18'8910	016003	321215
26	18'9307	18'8293	18'7772	18'7599	18'7599	18'7599	016357	326004
27	18'7755	18'6811	18'6332	18'6157	18'6138	18'6138	016751	331263
28	18'6084	18'5193	18'4761	18'4610	18'4588	18'4588	017183	336924
29	18'4328	18'3456	18'3057	18'2935	18'2921	18'2921	017643	342851
30	18'2460	18'1633	18'1238	18'1131	18'1131	18'1131	018143	349174
31	18'0507	17'9699	17'9336	17'9214	17'9212	17'9212	018675	355776
32	17'8591	17'7679	17'7324	17'7219	17'7201	17'7201	019208	362256
33	17'6593	17'5700	17'5227	17'5117	17'5117	17'5117	019776	369011
34	17'4557	17'3638	17'3178	17'2933	17'2933	17'2933	020368	375898
35	17'2443	17'1538	17'1045	17'0807	17'0690	17'0690	020995	383048
36	17'0258	16'9357	16'8876	16'8599	16'8482	16'8449	021660	390436
37	16'7931	16'7103	16'6624	16'6358	16'6215	16'6167	022367	398103
38	16'5641	16'4764	16'4297	16'4032	16'3914	16'3844	023118	406052
39	16'3206	16'2310	16'1884	16'1630	16'1518	16'1476	023919	414281
40	16'0684	15'9829	15'9383	15'9140	15'9041	15'9019	024771	422808
41	15'8109	15'7228	15'6793	15'6562	15'6468	15'6468	025669	431520
42	15'5477	15'4572	15'4112	15'3893	15'3803	15'3798	026615	440421
43	15'2790	15'1859	15'1375	15'1133	15'1050	15'1046	027612	449504
44	15'0079	14'9090	14'8582	14'8317	14'8212	14'8206	028653	458876
45	14'7342	14'6298	14'5733	14'5446	14'5327	14'5295	029740	467928
46	14'4562	14'3481	14'2863	14'2522	14'2393	14'2353	030883	477328
47	14'1734	14'0622	13'9971	13'9579	13'9443	13'9376	032089	486894
48	13'8835	13'7715	13'7039	13'6620	13'6415	13'6362	033372	496697
49	13'5889	13'4737	13'4062	13'3625	13'3403	13'3330	034729	506660
50	13'2876	13'1713	13'1016	13'0589	13'0355	13'0278	036175	516847
51	12'9809	12'8622	12'7926	12'7488	12'7268	12'7186	037710	527220
52	12'6689	12'5478	12'4772	12'4319	12'4117	12'4051	039343	537770
53	12'3523	12'2281	12'1567	12'1148	12'0933	12'0851	041077	548473
54	12'0289	11'9010	11'8313	11'7904	11'7693	11'7622	042937	559416
55	11'6998	11'5731	11'5019	11'4615	11'4414	11'4342	044925	570538
56	11'3683	11'2366	11'1659	11'1294	11'1096	11'1030	047036	581754
57	11'0341	10'8978	10'8246	10'7912	10'7752	10'7682	049281	593055
58	10'6997	10'5565	10'4816	10'4485	10'4361	10'4317	051656	604363
59	10'3663	10'2153	10'1364	10'1017	10'0936	10'0916	054163	615635
60	10'0349	9'8754	9'7920	9'7596	9'7517	9'7497	056806	626846
61	9'7063	9'5379	9'4496	9'4163	9'4099	9'4099	059587	637956
62	9'3769	9'2035	9'1101	9'0765	9'0707	9'0707	062552	649093
63	9'0398	8'8685	8'7747	8'7415	8'7346	8'7346	065787	660490
64	8'6991	8'5255	8'4390	8'4121	8'4023	8'4023	069286	672014
65	8'3771	8'1787	8'0952	8'0810	8'0749	8'0749	072827	682901
66	8'0533	7'8518	7'7478	7'7478	7'7478	7'7478	076610	693851
67	7'7286	7'5229	7'4218	7'4218	7'4218	7'4218	080750	704831
68	7'4020	7'1929	7'0940	7'0940	7'0940	7'0940	085203	715876
69	7'0783	6'8609	6'7651	6'7651	6'7651	6'7651	089972	726822
70	6'7614	6'5317	6'4339	6'4339	6'4339	6'4339	095026	737538
71	6'4563	6'2093	6'1056	6'1056	6'1056	6'1056	100300	747861
72	6'1657	5'8992	5'7844	5'7844	5'7844	5'7844	105737	757680
73	5'8917	5'6042	5'4762	5'4762	5'4762	5'4762	111285	766949
74	5'6245	5'3265	5'1841	5'1841	5'1841	5'1841	117140	775985
75	5'3681	5'0556	4'9106	4'9106	4'9106	4'9106	123218	784660
76	...	4'7959	4'6441	4'6441	4'6441	4'6441	...	...

## SPRAGUE'S SELECT-LIFE TABLES.

YEARS ELAPSED SINCE DATE OF INSURANCE.

Age	YEARS ELAPSED SINCE DATE OF INSURANCE.						$\omega_x$	$\Lambda_x$
	0	1	2	3	4	5 or more		
$x$	$a_x$	$a_{[x-1]+1}$	$a_{[x-2]+2}$	$a_{[x-3]+3}$	$a_{[x-4]+4}$	$a_x$	$\omega_x$	$\Lambda_x$
15	18'8643	...	...	...	...	18'8594	·011880	·235992
16	18'6793	18'6779	...	...	...	18'6779	·012354	·243108
17	18'5005	18'4986	18'4986	...	...	18'4986	·012819	·249984
18	18'3395	18'3236	18'3236	18'3236	...	18'3236	·013246	·256175
19	18'2016	18'1631	18'1609	18'1609	18'1609	18'1609	·013618	·261479
20	18'0918	18'0218	18'0152	18'0152	18'0152	18'0152	·013909	·265586
21	18'0292	17'9132	17'8931	17'8931	17'8931	17'8931	·014089	·268109
22	17'9558	17'8421	17'7903	17'7903	17'7903	17'7903	·014293	·270936
23	17'8716	17'7631	17'7100	17'6941	17'6941	17'6941	·014528	·274171
24	17'7776	17'6733	17'6221	17'6049	17'6010	17'6010	·014794	·277791
25	17'6734	17'5734	17'5235	17'5074	17'5054	17'5054	·015091	·281797
26	17'5571	17'4634	17'4151	17'3989	17'3989	17'3989	·015426	·286268
27	17'4286	17'3412	17'2967	17'2806	17'2789	17'2789	·015802	·291211
28	17'2893	17'2065	17'1665	17'1525	17'1505	17'1505	·016216	·296572
29	17'1418	17'0610	17'0239	17'0126	17'0112	17'0112	·016660	·302241
30	16'9841	16'9073	16'8707	16'8606	16'8606	16'8606	·017144	·308309
31	16'8184	16'7433	16'7095	16'6982	16'6980	16'6980	·017660	·314680
32	16'6559	16'5712	16'5381	16'5282	16'5266	16'5266	·018177	·320928
33	16'4857	16'4026	16'3586	16'3483	16'3483	16'3483	·018729	·327481
34	16'3118	16'2261	16'1832	16'1605	16'1605	16'1605	·019303	·334168
35	16'1305	16'0461	16'0000	15'9779	15'9669	15'9669	·019915	·341146
36	15'9422	15'8583	15'8133	15'7874	15'7765	15'7734	·020563	·348382
37	15'7463	15'6633	15'6186	15'5937	15'5803	15'5758	·021254	·355919
38	15'5422	15'4603	15'4165	15'3917	15'3807	15'3741	·021990	·363765
39	15'3300	15'2489	15'2062	15'1824	15'1719	15'1680	·022776	·371926
40	15'1095	15'0292	14'9873	14'9616	14'9553	14'9532	·023614	·380410
41	14'8833	14'8007	14'7598	14'7381	14'7293	14'7293	·024498	·389105
42	14'6514	14'5665	14'5234	14'5027	14'4942	14'4938	·025431	·398026
43	14'4142	14'3265	14'2811	14'2584	14'2505	14'2501	·026414	·407149
44	14'1739	14'0811	14'0330	14'0082	13'9984	13'9977	·027441	·416389
45	13'9311	13'8325	13'7795	13'7523	13'7411	13'7382	·028513	·425733
46	13'6835	13'5816	13'5231	13'4911	13'4788	13'4750	·029642	·435255
47	13'4308	13'3259	13'2645	13'2273	13'2117	13'2081	·030835	·444974
48	13'1709	13'0651	13'0014	12'9617	12'9422	12'9372	·032105	·454967
49	12'9063	12'7972	12'7334	12'6920	12'6710	12'6639	·033449	·465144
50	12'6346	12'5244	12'4583	12'4178	12'3956	12'3883	·034882	·475600
51	12'3571	12'2446	12'1786	12'1369	12'1160	12'1082	·036405	·486270
52	12'0740	11'9590	11'8920	11'8518	11'8296	11'8234	·038026	·497158
53	11'7860	11'6678	11'6000	11'5601	11'5396	11'5317	·039749	·508233
54	11'4908	11'3718	11'3026	11'2635	11'2435	11'2367	·041598	·519593
55	11'1894	11'0686	11'0007	10'9621	10'9429	10'9361	·043577	·531178
56	10'8850	10'7593	10'6918	10'6569	10'6379	10'6316	·045679	·542893
57	10'5773	10'4470	10'3770	10'3451	10'3298	10'3230	·047915	·554725
58	10'2687	10'1316	10'0598	10'0281	10'0163	10'0121	·050280	·566588
59	9'9602	9'8155	9'7398	9'7094	9'6988	9'6969	·052778	·578160
60	9'6528	9'4999	9'4198	9'3885	9'3809	9'3791	·055411	·590284
61	9'3474	9'1856	9'1008	9'0687	9'0625	9'0625	·058181	·602026
62	9'0404	8'8736	8'7838	8'7514	8'7458	8'7458	·061136	·613831
63	8'7254	8'5603	8'4698	8'4379	8'4313	8'4313	·064362	·625947
64	8'4061	8'2386	8'1550	8'1290	8'1196	8'1196	·067853	·638230
65	8'1010	7'9124	7'8316	7'8207	7'8119	7'8119	·071380	·649847
66	7'7994	7'6015	7'5038	7'5038	7'5038	7'5038	·075182	·661557
67	7'4931	7'2941	7'1960	7'1960	7'1960	7'1960	·079281	·673341
68	7'1843	6'9817	6'8857	6'8857	6'8857	6'8857	·083723	·685218
69	6'8775	6'6666	6'5735	6'5735	6'5735	6'5735	·088482	·697018
70	6'5765	6'3533	6'2583	6'2583	6'2583	6'2583	·093526	·708598
71	6'2861	6'0160	5'9450	5'9450	5'9450	5'9450	·098787	·719772
72	6'0091	5'7497	5'6379	5'6379	5'6379	5'6379	·104211	·730423
73	5'7476	5'4675	5'3426	5'3426	5'3426	5'3426	·109740	·740482
74	5'4919	5'2015	5'0624	5'0624	5'0624	5'0624	·115577	·750312
75	5'2463	4'9414	4'7998	4'7998	4'7998	4'7998	·121633	·759762
76	...	4'6918	4'5433	4'5433	4'5433	4'5433	...	...



$$1 + a_x$$

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$$100 \text{ } _nV_x$$



# TABLES

OF THE

# VALUES OF POLICIES.



$$100 \text{ } _nV_x$$

$$1 + a_x$$

23	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
23'9	.209	.000	.000	.000	.000	.000	.000	.000	.000	.000
'8	.626	.418	.210	.000	.000	.000	.000	.000	.000	.000
'7	1.044	.837	.629	.420	.211	.000	.000	.000	.000	.000
'6	1.461	1.255	1.048	.840	.632	.422	.211	.000	.000	.000
'5	1.879	1.674	1.468	1.261	1.053	.844	.634	.424	.212	.000
'4	2.296	2.092	1.887	1.681	1.474	1.266	1.057	.847	.637	.426
'3	2.714	2.510	2.306	2.101	1.895	1.688	1.480	1.271	1.062	.851
'2	3.132	2.929	2.725	2.521	2.316	2.110	1.903	1.695	1.486	1.277
'1	3.549	3.347	3.145	2.941	2.737	2.532	2.326	2.119	1.911	1.702
'0	3.967	3.766	3.564	3.361	3.158	2.954	2.748	2.542	2.335	2.128
22'9	4.384	4.184	3.983	3.782	3.579	3.376	3.171	2.966	2.760	2.553
'8	4.802	4.603	4.403	4.202	4.000	3.797	3.594	3.390	3.185	2.979
'7	5.219	5.021	4.822	4.622	4.421	4.219	4.017	3.814	3.609	3.404
'6	5.637	5.439	5.241	5.042	4.842	4.641	4.440	4.237	4.034	3.830
'5	6.054	5.858	5.660	5.462	5.263	5.063	4.863	4.661	4.459	4.255
'4	6.472	6.276	6.080	5.882	5.684	5.485	5.285	5.085	4.883	4.681
'3	6.889	6.695	6.499	6.303	6.105	5.907	5.708	5.508	5.308	5.106
'2	7.307	7.113	6.918	6.723	6.526	6.329	6.131	5.932	5.732	5.532
'1	7.724	7.531	7.338	7.143	6.947	6.751	6.554	6.356	6.157	5.957
'0	8.142	7.950	7.757	7.563	7.368	7.173	6.977	6.780	6.582	6.383
21'9	8.559	8.368	8.176	7.983	7.789	7.595	7.400	7.203	7.006	6.809
'8	8.977	8.787	8.595	8.403	8.211	8.017	7.822	7.627	7.431	7.234
'7	9.395	9.205	9.015	8.824	8.632	8.439	8.245	8.051	7.856	7.660
'6	9.812	9.623	9.434	9.244	9.053	8.861	8.668	8.475	8.280	8.085
'5	10.230	10.042	9.853	9.664	9.474	9.283	9.091	8.898	8.705	8.511
'4	10.647	10.460	10.273	10.084	9.895	9.705	9.514	9.322	9.130	8.936
'3	11.065	10.879	10.692	10.504	10.316	10.127	9.937	9.746	9.554	9.362
'2	11.482	11.297	11.111	10.924	10.737	10.549	10.359	10.169	9.979	9.787
'1	11.900	11.715	11.530	11.345	11.158	10.970	10.782	10.593	10.403	10.213
'0	12.317	12.134	11.950	11.765	11.579	11.392	11.205	11.017	10.828	10.638
20'9	12.735	12.552	12.369	12.185	12.000	11.814	11.628	11.441	11.253	11.064
'8	13.152	12.971	12.788	12.605	12.421	12.236	12.051	11.864	11.677	11.489
'7	13.570	13.389	13.208	13.025	12.842	12.658	12.474	12.288	12.102	11.915
'6	13.987	13.808	13.627	13.445	13.263	13.080	12.896	12.712	12.527	12.340
'5	14.405	14.226	14.046	13.866	13.684	13.502	13.319	13.136	12.951	12.766
'4	14.823	14.644	14.465	14.286	14.105	13.924	13.742	13.559	13.376	13.191
'3	15.240	15.063	14.885	14.706	14.526	14.346	14.165	13.983	13.800	13.617
'2	15.658	15.481	15.304	15.126	14.947	14.768	14.588	14.407	14.225	14.043
'1	16.075	15.900	15.723	15.546	15.368	15.190	15.011	14.831	14.650	14.468
'0	16.493	16.318	16.143	15.966	15.789	15.612	15.433	15.254	15.074	14.894
19'9	16.910	16.736	16.562	16.387	16.211	16.034	15.856	15.678	15.499	15.319
'8	17.328	17.155	16.981	16.807	16.632	16.456	16.279	16.102	15.924	15.745
'7	17.745	17.573	17.400	17.227	17.053	16.878	16.702	16.525	16.348	16.170
'6	18.163	17.992	17.820	17.647	17.474	17.300	17.125	16.949	16.773	16.596
'5	18.580	18.410	18.239	18.067	17.895	17.722	17.548	17.373	17.197	17.021
'4	18.998	18.828	18.658	18.487	18.316	18.143	17.970	17.797	17.622	17.447
'3	19.415	19.247	19.078	18.908	18.737	18.565	18.393	18.220	18.047	17.872
'2	19.833	19.665	19.497	19.328	19.158	18.987	18.816	18.644	18.471	18.298
'1	20.251	20.084	19.916	19.748	19.579	19.409	19.239	19.068	18.896	18.723
'0	20.668	20.502	20.335	20.168	20.000	19.831	19.662	19.492	19.321	19.149

$1 + a_x$ 

23	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
18'9	21'086	20'921	20'755	20'588	20'421	20'253	20'085	19'915	19'745	19'574
'8	21'503	21'339	21'174	21'008	20'842	20'675	20'507	20'339	20'170	20'000
'7	21'921	21'757	21'593	21'429	21'263	21'097	20'930	20'763	20'594	20'426
'6	22'338	22'176	22'013	21'849	21'684	21'519	21'353	21'186	21'019	20'851
'5	22'756	22'594	22'432	22'269	22'105	21'941	21'776	21'610	21'444	21'277
'4	23'173	23'013	22'851	22'689	22'526	22'363	22'199	22'034	21'868	21'702
'3	23'591	23'431	23'270	23'109	22'947	22'785	22'622	22'458	22'293	22'128
'2	24'008	23'849	23'690	23'529	23'368	23'207	23'044	22'881	22'718	22'553
'1	24'426	24'268	24'109	23'950	23'789	23'629	23'467	23'305	23'142	22'979
'0	24'843	24'686	24'528	24'370	24'211	24'051	23'890	23'729	23'567	23'404
17'9	25'261	25'105	24'948	24'790	24'632	24'473	24'313	24'153	23'992	23'830
'8	25'678	25'523	25'367	25'210	25'053	24'895	24'736	24'576	24'416	24'255
'7	26'096	25'941	25'786	25'630	25'474	25'316	25'159	25'000	24'841	24'681
'6	26'514	26'360	26'205	26'050	25'895	25'738	25'581	25'424	25'265	25'106
'5	26'931	26'778	26'625	26'471	26'316	26'160	26'004	25'847	25'690	25'532
'4	27'349	27'197	27'044	26'891	26'737	26'582	26'427	26'271	26'115	25'957
'3	27'766	27'615	27'463	27'311	27'158	27'004	26'850	26'695	26'539	26'383
'2	28'184	28'033	27'883	27'731	27'579	27'426	27'273	27'119	26'964	26'809
'1	28'601	28'452	28'302	28'151	28'000	27'848	27'696	27'542	27'389	27'234
'0	29'019	28'870	28'721	28'571	28'421	28'270	28'118	27'966	27'813	27'660
16'9	29'436	29'289	29'140	28'992	28'842	28'692	28'541	28'390	28'238	28'085
'8	29'854	29'707	29'560	29'412	29'263	29'114	28'964	28'814	28'662	28'511
'7	30'271	30'126	29'979	29'832	29'684	29'536	29'387	29'237	29'087	28'936
'6	30'689	30'544	30'398	30'252	30'105	29'958	29'810	29'661	29'512	29'362
'5	31'106	30'962	30'818	30'672	30'526	30'380	30'233	30'085	29'936	29'787
'4	31'524	31'381	31'237	31'092	30'947	30'802	30'655	30'508	30'361	30'213
'3	31'942	31'799	31'656	31'513	31'368	31'224	31'078	30'932	30'786	30'638
'2	32'359	32'218	32'075	31'933	31'789	31'646	31'501	31'356	31'210	31'064
'1	32'777	32'636	32'495	32'353	32'211	32'068	31'924	31'780	31'635	31'489
'0	33'194	33'054	32'914	32'773	32'632	32'489	32'347	32'203	32'059	31'915
15'9	33'612	33'473	33'333	33'193	33'053	32'911	32'770	32'627	32'484	32'340
'8	34'029	33'891	33'753	33'613	33'474	33'333	33'192	33'051	32'909	32'766
'7	34'447	34'310	34'172	34'034	33'895	33'755	33'615	33'475	33'333	33'191
'6	34'864	34'728	34'591	34'454	34'316	34'177	34'038	33'898	33'758	33'617
'5	35'282	35'146	35'010	34'874	34'737	34'599	34'461	34'322	34'183	34'043
'4	35'699	35'565	35'430	35'294	35'158	35'021	34'884	34'746	34'607	34'468
'3	36'117	35'983	35'849	35'714	35'579	35'443	35'307	35'169	35'032	34'894
'2	36'534	36'402	36'268	36'134	36'000	35'865	35'729	35'593	35'456	35'319
'1	36'952	36'820	36'688	36'555	36'421	36'287	36'152	36'017	35'881	35'745
'0	37'370	37'238	37'107	36'975	36'842	36'709	36'575	36'441	36'306	36'170
'01	·042	·042	·042	·042	·042	·042	·042	·042	·042	·043
'02	·084	·084	·084	·084	·084	·084	·085	·085	·085	·085
'03	·125	·126	·126	·126	·126	·127	·127	·127	·127	·128
'04	·167	·167	·168	·168	·168	·169	·169	·169	·170	·170
'05	·209	·209	·210	·210	·211	·211	·211	·212	·212	·213
'06	·251	·251	·252	·252	·253	·253	·254	·254	·255	·255
'07	·292	·293	·294	·294	·295	·295	·296	·297	·297	·298
'08	·334	·335	·335	·336	·337	·338	·338	·339	·340	·340
'09	·376	·377	·377	·378	·379	·380	·381	·381	·382	·383

$$1 + a_x$$

23	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
14'9	37'787	37'657	37'526	37'395	37'263	37'131	36'998	36'864	36'730	36'596
'8	38'205	38'075	37'945	37'815	37'684	37'553	37'421	37'288	37'155	37'021
'7	38'622	38'494	38'365	38'235	38'105	37'975	37'844	37'712	37'580	37'447
'6	39'040	38'912	38'784	38'655	38'526	38'397	38'266	38'136	38'004	37'872
'5	39'457	39'331	39'203	39'076	38'947	38'819	38'689	38'559	38'429	38'298
'4	39'875	39'749	39'623	39'496	39'368	39'241	39'112	38'983	38'854	38'723
'3	40'292	40'167	40'042	39'916	39'789	39'662	39'535	39'407	39'278	39'149
'2	40'710	40'586	40'461	40'336	40'211	40'084	39'958	39'831	39'703	39'574
'1	41'127	41'004	40'881	40'756	40'632	40'506	40'381	40'254	40'127	40'000
'0	41'545	41'423	41'300	41'176	41'053	40'928	40'803	40'678	40'552	40'426
13'9	41'962	41'841	41'719	41'597	41'474	41'350	41'226	41'102	40'977	40'851
'8	42'380	42'259	42'138	42'017	41'895	41'772	41'649	41'525	41'401	41'277
'7	42'797	42'678	42'558	42'437	42'316	42'194	42'072	41'949	41'826	41'702
'6	43'215	43'096	42'977	42'857	42'737	42'616	42'495	42'373	42'251	42'128
'5	43'633	43'515	43'396	43'277	43'158	43'038	42'918	42'797	42'675	42'553
'4	44'050	43'933	43'816	43'697	43'579	43'460	43'340	43'220	43'100	42'979
'3	44'468	44'351	44'235	44'118	44'000	43'882	43'763	43'644	43'524	43'404
'2	44'885	44'770	44'654	44'538	44'421	44'304	44'186	44'068	43'949	43'830
'1	45'303	45'188	45'073	44'958	44'842	44'726	44'609	44'492	44'374	44'255
'0	45'720	45'607	45'493	45'378	45'263	45'148	45'032	44'915	44'798	44'681
12'9	46'138	46'025	45'912	45'798	45'684	45'570	45'455	45'339	45'223	45'106
'8	46'555	46'444	46'331	46'218	46'105	45'992	45'877	45'763	45'648	45'532
'7	46'973	46'862	46'751	46'639	46'526	46'413	46'300	46'186	46'072	45'957
'6	47'390	47'280	47'170	47'059	46'947	46'835	46'723	46'610	46'497	46'383
'5	47'808	47'699	47'589	47'479	47'368	47'257	47'146	47'034	46'921	46'809
'4	48'225	48'117	48'008	47'899	47'789	47'679	47'569	47'458	47'346	47'234
'3	48'643	48'536	48'428	48'319	48'211	48'101	47'992	47'881	47'771	47'660
'2	49'061	48'954	48'847	48'739	48'632	48'523	48'414	48'305	48'195	48'085
'1	49'478	49'372	49'266	49'160	49'053	48'945	48'837	48'729	48'620	48'511
'0	49'896	49'791	49'686	49'580	49'474	49'367	49'260	49'153	49'045	48'936
11'9	50'313	50'209	50'105	50'000	49'895	49'789	49'683	49'576	49'469	49'362
'8	50'731	50'628	50'524	50'420	50'316	50'211	50'106	50'000	49'894	49'787
'7	51'148	51'046	50'943	50'840	50'737	50'633	50'529	50'424	50'318	50'213
'6	51'566	51'464	51'363	51'261	51'158	51'055	50'951	50'847	50'743	50'638
'5	51'983	51'883	51'782	51'681	51'579	51'477	51'374	51'271	51'168	51'064
'4	52'401	52'301	52'201	52'101	52'000	51'899	51'797	51'695	51'592	51'489
'3	52'818	52'720	52'621	52'521	52'421	52'321	52'220	52'119	52'017	51'915
'2	53'236	53'138	53'040	52'941	52'842	52'743	52'643	52'542	52'442	52'340
'1	53'653	53'556	53'459	53'361	53'263	53'165	53'066	52'966	52'866	52'766
'0	54'071	53'975	53'878	53'782	53'684	53'586	53'488	53'390	53'291	53'191
10'9	54'489	54'393	54'298	54'202	54'105	54'008	53'911	53'814	53'716	53'617
'8	54'906	54'812	54'717	54'622	54'526	54'430	54'334	54'237	54'140	54'043
'7	55'324	55'230	55'136	55'042	54'947	54'852	54'757	54'661	54'565	54'468
'6	55'741	55'649	55'556	55'462	55'368	55'274	55'180	55'085	54'989	54'894
'5	56'159	56'067	55'975	55'882	55'789	55'696	55'603	55'508	55'414	55'319
'4	56'576	56'485	56'394	56'303	56'211	56'118	56'025	55'932	55'839	55'745
'3	56'994	56'904	56'813	56'723	56'632	56'540	56'448	56'356	56'263	56'170
'2	57'411	57'322	57'233	57'143	57'053	56'962	56'871	56'780	56'688	56'596
'1	57'829	57'741	57'652	57'563	57'474	57'384	57'294	57'203	57'113	57'021
'0	58'246	58'159	58'071	57'983	57'895	57'806	57'717	57'627	57'537	57'447



$$1 + a_x$$

23	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
1 + $a_{x+n}$										
9'9	58'664	58'577	58'491	58'403	58'316	58'228	58'140	58'051	57'962	57'872
·8	59'081	58'996	58'910	58'824	58'737	58'650	58'562	58'475	58'386	58'298
·7	59'499	59'414	59'329	59'244	59'158	59'072	58'985	58'898	58'811	58'723
·6	59'916	59'833	59'748	59'664	59'579	59'494	59'408	59'322	59'236	59'149
·5	60'334	60'251	60'168	60'084	60'000	59'916	59'831	59'746	59'660	59'574
·4	60'752	60'669	60'587	60'504	60'421	60'338	60'254	60'169	60'085	60'000
·3	61'169	61'088	61'006	60'924	60'842	60'759	60'677	60'593	60'510	60'426
·2	61'587	61'506	61'426	61'345	61'263	61'181	61'099	61'017	60'934	60'851
·1	62'004	61'925	61'845	61'765	61'684	61'603	61'522	61'441	61'359	61'277
·0	62'422	62'343	62'264	62'185	62'105	62'025	61'945	61'864	61'783	61'702
8'9	62'839	62'762	62'683	62'605	62'526	62'447	62'368	62'288	62'208	62'128
·8	63'257	63'180	63'103	63'025	62'947	62'869	62'791	62'712	62'633	62'553
·7	63'674	63'598	63'522	63'445	63'368	63'291	63'214	63'136	63'057	62'979
·6	64'092	64'017	63'941	63'866	63'789	63'713	63'636	63'559	63'482	63'404
·5	64'509	64'435	64'361	64'286	64'211	64'135	64'059	63'983	63'907	63'830
·4	64'927	64'854	64'780	64'706	64'632	64'557	64'482	64'407	64'331	64'255
·3	65'344	65'272	65'199	65'126	65'053	64'979	64'905	64'831	64'756	64'681
·2	65'762	65'690	65'618	65'546	65'474	65'401	65'328	65'254	65'180	65'106
·1	66'180	66'109	66'038	65'966	65'895	65'823	65'751	65'678	65'605	65'532
·0	66'597	66'527	66'457	66'387	66'316	66'245	66'173	66'102	66'030	65'957
7'9	67'015	66'946	66'876	66'807	66'737	66'667	66'596	66'525	66'454	66'383
·8	67'432	67'364	67'296	67'227	67'158	67'089	67'019	66'949	66'879	66'809
·7	67'850	67'782	67'715	67'647	67'579	67'511	67'442	67'373	67'304	67'234
·6	68'267	68'201	68'134	68'067	68'000	67'932	67'865	67'797	67'728	67'660
·5	68'685	68'619	68'553	68'487	68'421	68'354	68'288	68'220	68'153	68'085
·4	69'102	69'038	68'973	68'908	68'842	68'776	68'710	68'644	68'578	68'511
·3	69'520	69'456	69'392	69'328	69'263	69'198	69'133	69'068	69'002	68'936
·2	69'937	69'874	69'811	69'748	69'684	69'620	69'556	69'492	69'427	69'362
·1	70'355	70'293	70'231	70'168	70'105	70'042	69'979	69'915	69'851	69'787
·0	70'772	70'711	70'650	70'588	70'526	70'464	70'402	70'339	70'276	70'213
6'9	71'190	71'130	71'069	71'008	70'947	70'886	70'825	70'763	70'701	70'638
·8	71'608	71'548	71'488	71'429	71'368	71'308	71'247	71'186	71'125	71'064
·7	72'025	71'967	71'908	71'849	71'789	71'730	71'670	71'610	71'550	71'489
·6	72'443	72'385	72'327	72'269	72'211	72'152	72'093	72'034	71'975	71'915
·5	72'860	72'803	72'746	72'689	72'632	72'574	72'516	72'458	72'399	72'340
·4	73'278	73'222	73'166	73'109	73'053	72'996	72'939	72'881	72'824	72'766
·3	73'695	73'640	73'585	73'529	73'474	73'418	73'362	73'305	73'248	73'191
·2	74'113	74'059	74'004	73'950	73'895	73'840	73'784	73'729	73'673	73'617
·1	74'530	74'477	74'423	74'370	74'316	74'262	74'207	74'153	74'098	74'043
·0	74'948	74'895	74'843	74'790	74'737	74'684	74'630	74'576	74'522	74'468
·01	·042	·042	·042	·042	·042	·042	·042	·042	·042	·043
·02	·084	·084	·084	·084	·084	·084	·085	·085	·085	·085
·03	·125	·126	·126	·126	·126	·127	·127	·127	·127	·128
·04	·167	·167	·168	·168	·168	·169	·169	·169	·170	·170
·05	·209	·209	·210	·210	·211	·211	·211	·212	·212	·213
·06	·251	·251	·252	·252	·253	·253	·254	·254	·255	·255
·07	·292	·293	·294	·294	·295	·295	·296	·297	·297	·298
·08	·334	·335	·335	·336	·337	·338	·338	·339	·340	·340
·09	·376	·377	·377	·378	·379	·380	·381	·381	·382	·383



$$1 + a_x$$

23	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
5'9	75'365	75'314	75'262	75'210	75'158	75'105	75'053	75'000	74'947	74'894
'8	75'783	75'732	75'681	75'630	75'579	75'527	75'476	75'424	75'372	75'319
'7	76'200	76'151	76'101	76'050	76'000	75'949	75'899	75'847	75'796	75'745
'6	76'618	76'569	76'520	76'471	76'421	76'371	76'321	76'271	76'221	76'170
'5	77'035	76'987	76'939	76'891	76'842	76'793	76'744	76'695	76'645	76'596
'4	77'453	77'406	77'358	77'311	77'263	77'215	77'167	77'119	77'070	77'021
'3	77'871	77'824	77'778	77'731	77'684	77'637	77'590	77'542	77'495	77'447
'2	78'288	78'243	78'197	78'151	78'105	78'059	78'013	77'966	77'919	77'872
'1	78'706	78'661	78'616	78'571	78'526	78'481	78'436	78'390	78'344	78'298
'0	79'123	79'079	79'036	78'992	78'947	78'903	78'858	78'814	78'769	78'723
4'9	79'541	79'498	79'455	79'412	79'368	79'325	79'281	79'237	79'193	79'149
'8	79'958	79'916	79'874	79'832	79'789	79'747	79'704	79'661	79'618	79'574
'7	80'376	80'335	80'293	80'252	80'211	80'169	80'127	80'085	80'042	80'000
'6	80'793	80'753	80'713	80'672	80'632	80'591	80'550	80'508	80'467	80'426
'5	81'211	81'172	81'132	81'092	81'053	81'013	80'973	80'932	80'892	80'851
'4	81'628	81'590	81'551	81'513	81'474	81'435	81'395	81'356	81'316	81'277
'3	82'046	82'008	81'971	81'933	81'895	81'857	81'818	81'780	81'741	81'702
'2	82'463	82'427	82'390	82'353	82'316	82'278	82'241	82'203	82'166	82'128
'1	82'881	82'845	82'809	82'773	82'737	82'700	82'664	82'627	82'590	82'553
'0	83'299	83'264	83'229	83'193	83'158	83'122	83'087	83'051	83'015	82'979
3'9	83'716	83'682	83'648	83'613	83'579	83'544	83'510	83'475	83'440	83'404
'8	84'134	84'100	84'067	84'034	84'000	83'966	83'932	83'898	83'864	83'830
'7	84'551	84'519	84'486	84'454	84'421	84'388	84'355	84'322	84'289	84'255
'6	84'969	84'937	84'906	84'874	84'842	84'810	84'778	84'746	84'713	84'681
'5	85'386	85'356	85'325	85'294	85'263	85'232	85'201	85'169	85'138	85'106
'4	85'804	85'774	85'744	85'714	85'684	85'654	85'624	85'593	85'563	85'532
'3	86'221	86'192	86'164	86'134	86'105	86'076	86'047	86'017	85'987	85'957
'2	86'639	86'611	86'583	86'555	86'526	86'498	86'469	86'441	86'412	86'383
'1	87'056	87'029	87'002	86'975	86'947	86'920	86'892	86'864	86'837	86'809
'0	87'474	87'448	87'421	87'395	87'368	87'342	87'315	87'288	87'261	87'234
2'9	87'891	87'866	87'841	87'815	87'789	87'764	87'738	87'712	87'686	87'660
'8	88'309	88'285	88'260	88'235	88'211	88'186	88'161	88'136	88'110	88'085
'7	88'727	88'703	88'679	88'655	88'632	88'608	88'584	88'559	88'535	88'511
'6	89'144	89'121	89'099	89'076	89'053	89'030	89'006	88'983	88'960	88'936
'5	89'562	89'540	89'518	89'496	89'474	89'451	89'429	89'407	89'384	89'362
'4	89'979	89'958	89'937	89'916	89'895	89'873	89'852	89'831	89'809	89'787
'3	90'397	90'377	90'356	90'336	90'316	90'295	90'275	90'254	90'234	90'213
'2	90'814	90'795	90'776	90'756	90'737	90'717	90'698	90'678	90'658	90'638
'1	91'232	91'213	91'195	91'176	91'158	91'139	91'121	91'102	91'083	91'064
'0	91'649	91'632	91'614	91'597	91'579	91'561	91'543	91'525	91'507	91'489
1'9	92'067	92'050	92'034	92'017	92'000	91'983	91'966	91'949	91'932	91'915
'8	92'484	92'469	92'453	92'437	92'421	92'405	92'389	92'373	92'357	92'340
'7	92'902	92'887	92'872	92'857	92'842	92'827	92'812	92'797	92'781	92'766
'6	93'319	93'305	93'291	93'277	93'263	93'249	93'235	93'220	93'206	93'191
'5	93'737	93'724	93'711	93'697	93'684	93'671	93'658	93'644	93'631	93'617
'4	94'154	94'142	94'130	94'118	94'105	94'093	94'080	94'068	94'055	94'043
'3	94'572	94'561	94'549	94'538	94'526	94'515	94'503	94'492	94'480	94'468
'2	94'990	94'979	94'969	94'958	94'947	94'937	94'926	94'915	94'904	94'894
'1	95'407	95'397	95'388	95'378	95'368	95'359	95'349	95'339	95'329	95'319
'0	95'825	95'816	95'807	95'798	95'789	95'781	95'772	95'763	95'754	95'745

$1 + a_x$ 

23	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
·01	·042	·042	·042	·042	·042	·042	·042	·042	·042	·043
·02	·084	·084	·084	·084	·084	·084	·085	·085	·085	·085
·03	·125	·126	·126	·126	·126	·127	·127	·127	·127	·128
·04	·167	·167	·168	·168	·168	·169	·169	·169	·170	·170
·05	·209	·209	·210	·210	·211	·211	·211	·212	·212	·213
·06	·251	·251	·252	·252	·253	·253	·254	·254	·255	·255
·07	·292	·293	·294	·294	·295	·295	·296	·297	·297	·298
·08	·334	·335	·335	·336	·337	·338	·338	·339	·340	·340
·09	·376	·377	·377	·378	·379	·380	·381	·381	·382	·383

23	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
23'4	·213	·000	·000	·000	·000	·000	·000	·000	·000	·000
'3	·640	·427	·214	·000	·000	·000	·000	·000	·000	·000
'2	1'066	·855	·642	·429	·215	·000	·000	·000	·000	·000
'1	1'493	1'282	1'071	·858	·645	·431	·216	·000	·000	·000
'0	1'919	1'709	1'499	1'288	1'075	·862	·648	·433	·217	·000
22'9	2'345	2'137	1'927	1'717	1'505	1'293	1'080	·866	·651	·435
'8	2'772	2'564	2'355	2'146	1'935	1'724	1'512	1'299	1'085	·870
'7	3'198	2'991	2'784	2'575	2'366	2'155	1'944	1'732	1'518	1'304
'6	3'625	3'419	3'212	3'004	2'796	2'586	2'376	2'165	1'952	1'739
'5	4'051	3'846	3'640	3'433	3'226	3'017	2'808	2'597	2'386	2'174
'4	4'478	4'274	4'069	3'863	3'656	3'448	3'240	3'030	2'820	2'609
'3	4'904	4'701	4'497	4'292	4'086	3'879	3'672	3'463	3'254	3'043
'2	5'330	5'128	4'925	4'721	4'516	4'310	4'104	3'896	3'688	3'478
'1	5'757	5'556	5'353	5'150	4'946	4'741	4'536	4'329	4'121	3'913
'0	6'183	5'983	5'782	5'579	5'376	5'172	4'968	4'762	4'555	4'348
21'9	6'610	6'410	6'210	6'009	5'806	5'603	5'400	5'195	4'989	4'783
'8	7'036	6'838	6'638	6'438	6'237	6'034	5'832	5'628	5'423	5'217
'7	7'463	7'265	7'066	6'867	6'667	6'466	6'263	6'061	5'857	5'652
'6	7'889	7'692	7'495	7'296	7'097	6'897	6'695	6'494	6'291	6'087
'5	8'316	8'120	7'923	7'725	7'527	7'328	7'127	6'926	6'725	6'522
'4	8'742	8'547	8'351	8'155	7'957	7'759	7'559	7'359	7'158	6'957
'3	9'168	8'974	8'779	8'584	8'387	8'190	7'991	7'792	7'592	7'391
'2	9'595	9'402	9'208	9'013	8'817	8'621	8'423	8'225	8'026	7'826
'1	10'021	9'829	9'636	9'442	9'247	9'052	8'855	8'658	8'460	8'261
'0	10'448	10'256	10'064	9'871	9'677	9'483	9'287	9'091	8'894	8'696

·01	·043	·043	·043	·043	·043	·043	·043	·043	·043	·043
·02	·085	·085	·086	·086	·086	·086	·086	·087	·087	·087
·03	·128	·128	·128	·129	·129	·129	·130	·130	·130	·130
·04	·171	·171	·171	·172	·172	·172	·173	·173	·174	·174
·05	·213	·214	·214	·215	·215	·216	·216	·216	·217	·217
·06	·256	·256	·257	·258	·258	·259	·259	·260	·260	·261
·07	·299	·299	·300	·300	·301	·302	·302	·303	·304	·304
·08	·341	·342	·343	·343	·344	·345	·346	·346	·347	·348
·09	·384	·385	·385	·386	·387	·388	·389	·390	·390	·391

$1 + a_x$

23	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
20'9	10'874	10'684	10'493	10'300	10'108	9'914	9'719	9'524	9'328	9'130
'8	11'301	11'111	10'921	10'730	10'538	10'345	10'151	9'957	9'761	9'565
'7	11'727	11'538	11'349	11'159	10'968	10'776	10'583	10'390	10'195	10'000
'6	12'154	11'966	11'777	11'588	11'398	11'207	11'015	10'823	10'629	10'435
'5	12'580	12'393	12'206	12'017	11'828	11'638	11'447	11'255	11'063	10'870
'4	13'006	12'821	12'634	12'446	12'258	12'069	11'879	11'688	11'497	11'304
'3	13'433	13'248	13'062	12'876	12'688	12'500	12'311	12'121	11'931	11'739
'2	13'859	13'675	13'490	13'305	13'118	12'931	12'743	12'554	12'364	12'174
'1	14'286	14'103	13'919	13'734	13'548	13'362	13'175	12'987	12'798	12'609
'0	14'712	14'530	14'347	14'163	13'978	13'793	13'607	13'420	13'232	13'043
19'9	15'139	14'957	14'775	14'592	14'409	14'224	14'039	13'853	13'666	13'478
'8	15'565	15'385	15'203	15'021	14'839	14'655	14'471	14'286	14'100	13'913
'7	15'991	15'812	15'632	15'451	15'269	15'086	14'903	14'719	14'534	14'348
'6	16'418	16'239	16'060	15'880	15'699	15'517	15'335	15'152	14'967	14'783
'5	16'844	16'667	16'488	16'309	16'129	15'948	15'767	15'584	15'401	15'217
'4	17'271	17'094	16'916	16'738	16'559	16'379	16'199	16'017	15'835	15'652
'3	17'697	17'521	17'345	17'167	16'989	16'810	16'631	16'450	16'269	16'087
'2	18'124	17'949	17'773	17'597	17'419	17'241	17'063	16'883	16'703	16'522
'1	18'550	18'376	18'201	18'026	17'849	17'672	17'495	17'316	17'137	16'957
'0	18'977	18'803	18'630	18'455	18'280	18'103	17'927	17'749	17'570	17'391
18'9	19'403	19'231	19'058	18'884	18'710	18'534	18'359	18'182	18'004	17'826
'8	19'829	19'658	19'486	19'313	19'140	18'966	18'790	18'615	18'438	18'261
'7	20'256	20'085	19'914	19'742	19'570	19'397	19'222	19'048	18'872	18'696
'6	20'682	20'513	20'343	20'172	20'000	19'828	19'654	19'481	19'306	19'130
'5	21'109	20'940	20'771	20'601	20'430	20'259	20'086	19'913	19'740	19'565
'4	21'535	21'368	21'199	21'030	20'860	20'690	20'518	20'346	20'174	20'000
'3	21'962	21'795	21'627	21'459	21'290	21'121	20'950	20'779	20'607	20'435
'2	22'388	22'222	22'056	21'888	21'720	21'552	21'382	21'212	21'041	20'870
'1	22'814	22'650	22'484	22'318	22'151	21'983	21'814	21'645	21'475	21'304
'0	23'241	23'077	22'912	22'747	22'581	22'414	22'246	22'078	21'909	21'739
17'9	23'667	23'504	23'340	23'176	23'011	22'845	22'678	22'511	22'343	22'174
'8	24'094	23'932	23'769	23'605	23'441	23'276	23'110	22'944	22'777	22'609
'7	24'520	24'359	24'197	24'034	23'871	23'707	23'542	23'377	23'210	23'043
'6	24'947	24'786	24'625	24'464	24'301	24'138	23'974	23'810	23'644	23'478
'5	25'373	25'214	25'054	24'893	24'731	24'569	24'406	24'242	24'078	23'913
'4	25'800	25'641	25'482	25'322	25'161	25'000	24'838	24'675	24'512	24'348
'3	26'226	26'068	25'910	25'751	25'591	25'431	25'270	25'108	24'946	24'783
'2	26'652	26'496	26'338	26'180	26'022	25'862	25'702	25'541	25'380	25'217
'1	27'079	26'923	26'767	26'609	26'452	26'293	26'134	25'974	25'813	25'652
'0	27'505	27'350	27'195	27'039	26'882	26'724	26'566	26'407	26'247	26'087
16'9	27'932	27'778	27'623	27'468	27'312	27'155	26'998	26'840	26'681	26'522
'8	28'358	28'205	28'051	27'897	27'742	27'586	27'430	27'273	27'115	26'957
'7	28'785	28'632	28'480	28'326	28'172	28'017	27'862	27'706	27'549	27'391
'6	29'211	29'060	28'908	28'755	28'602	28'448	28'294	28'139	27'983	27'826
'5	29'638	29'487	29'336	29'185	29'032	28'879	28'726	28'571	28'416	28'261
'4	30'064	29'915	29'764	29'614	29'462	29'310	29'158	29'004	28'850	28'696
'3	30'490	30'342	30'193	30'043	29'892	29'741	29'590	29'437	29'284	29'130
'2	30'917	30'769	30'621	30'472	30'323	30'172	30'022	29'870	29'718	29'565
'1	31'343	31'197	31'049	30'901	30'753	30'603	30'454	30'303	30'152	30'000
'0	31'770	31'624	31'478	31'330	31'183	31'034	30'886	30'736	30'586	30'435



$1+a_x$ 

23	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
15'9	32'196	32'051	31'906	31'760	31'613	31'466	31'317	31'169	31'020	30'870
'8	32'623	32'479	32'334	32'189	32'043	31'897	31'749	31'602	31'453	31'304
'7	33'049	32'906	32'762	32'618	32'473	32'328	32'181	32'035	31'887	31'739
'6	33'475	33'333	33'191	33'047	32'903	32'759	32'613	32'468	32'321	32'174
'5	33'902	33'761	33'619	33'476	33'333	33'190	33'045	32'900	32'755	32'609
'4	34'328	34'188	34'047	33'906	33'763	33'621	33'477	33'333	33'189	33'043
'3	34'755	34'615	34'475	34'335	34'194	34'052	33'909	33'766	33'623	33'478
'2	35'181	35'043	34'904	34'764	34'624	34'483	34'341	34'199	34'056	33'913
'1	35'608	35'470	35'332	35'193	35'054	34'914	34'773	34'632	34'490	34'348
'0	36'034	35'897	35'760	35'622	35'484	35'345	35'205	35'065	34'924	34'783
14'9	36'461	36'325	36'188	36'051	35'914	35'776	35'637	35'498	35'358	35'217
'8	36'887	36'752	36'617	36'481	36'344	36'207	36'069	35'931	35'792	35'652
'7	37'313	37'179	37'045	36'910	36'774	36'638	36'501	36'364	36'226	36'087
'6	37'740	37'607	37'473	37'339	37'204	37'069	36'933	36'797	36'659	36'522
'5	38'166	38'034	37'901	37'768	37'634	37'500	37'365	37'229	37'093	36'957
'4	38'593	38'462	38'330	38'197	38'065	37'931	37'797	37'662	37'527	37'391
'3	39'019	38'889	38'758	38'627	38'495	38'362	38'229	38'095	37'961	37'826
'2	39'446	39'316	39'186	39'056	38'925	38'793	38'661	38'528	38'395	38'261
'1	39'872	39'744	39'615	39'485	39'355	39'224	39'093	38'961	38'829	38'696
'0	40'299	40'171	40'043	39'914	39'785	39'655	39'525	39'394	39'262	39'130
13'9	40'725	40'598	40'471	40'343	40'215	40'086	39'957	39'827	39'696	39'565
'8	41'151	41'026	40'899	40'773	40'645	40'517	40'389	40'260	40'130	40'000
'7	41'578	41'453	41'328	41'202	41'075	40'948	40'821	40'693	40'564	40'435
'6	42'004	41'880	41'756	41'631	41'505	41'379	41'253	41'126	40'998	40'870
'5	42'431	42'308	42'184	42'060	41'935	41'810	41'685	41'558	41'432	41'304
'4	42'857	42'735	42'612	42'489	42'366	42'241	42'117	41'991	41'866	41'739
'3	43'284	43'162	43'041	42'918	42'796	42'672	42'549	42'424	42'299	42'174
'2	43'710	43'590	43'469	43'348	43'226	43'103	42'981	42'857	42'733	42'609
'1	44'136	44'017	43'897	43'777	43'656	43'534	43'413	43'290	43'167	43'043
'0	44'563	44'444	44'325	44'206	44'086	43'966	43'844	43'723	43'601	43'478
12'9	44'989	44'872	44'754	44'635	44'516	44'397	44'276	44'156	44'035	43'913
'8	45'416	45'299	45'182	45'064	44'946	44'828	44'708	44'589	44'469	44'348
'7	45'842	45'726	45'610	45'494	45'376	45'259	45'140	45'022	44'902	44'783
'6	46'269	46'154	46'039	45'923	45'806	45'690	45'572	45'455	45'336	45'217
'5	46'695	46'581	46'467	46'352	46'237	46'121	46'004	45'887	45'770	45'652
'4	47'122	47'009	46'895	46'781	46'667	46'552	46'436	46'320	46'204	46'087
'3	47'548	47'436	47'323	47'210	47'097	46'983	46'868	46'753	46'638	46'522
'2	47'974	47'863	47'752	47'639	47'527	47'414	47'300	47'186	47'072	46'957
'1	48'401	48'291	48'180	48'069	47'957	47'845	47'732	47'619	47'505	47'391
'0	48'827	48'718	48'608	48'498	48'387	48'276	48'164	48'052	47'939	47'826
'01	'013	'013	'013	'013	'013	'013	'013	'013	'013	'013
'02	'085	'085	'086	'086	'086	'086	'086	'087	'087	'087
'03	'128	'128	'128	'129	'129	'129	'130	'130	'130	'130
'04	'171	'171	'171	'172	'172	'172	'173	'173	'174	'174
'05	'213	'214	'214	'215	'215	'216	'216	'216	'217	'217
'06	'256	'256	'257	'258	'258	'259	'259	'260	'260	'261
'07	'299	'299	'300	'300	'301	'302	'302	'303	'304	'304
'08	'341	'342	'343	'343	'344	'345	'346	'346	'347	'348
'09	'384	'385	'385	'386	'387	'388	'389	'390	'390	'391

$1 + a_x$ 

23	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
11'9	49'254	49'145	49'036	48'927	48'817	48'707	48'596	48'485	48'373	48'261
'8	49'680	49'573	49'465	49'356	49'247	49'138	49'028	48'918	48'807	48'696
'7	50'107	50'000	49'893	49'785	49'677	49'569	49'460	49'351	49'241	49'130
'6	50'533	50'427	50'321	50'215	50'108	50'000	49'892	49'784	49'675	49'565
'5	50'959	50'855	50'749	50'644	50'538	50'431	50'324	50'216	50'108	50'000
'4	51'386	51'282	51'178	51'073	50'968	50'862	50'756	50'649	50'542	50'435
'3	51'812	51'709	51'606	51'502	51'398	51'293	51'188	51'082	50'976	50'870
'2	52'239	52'137	52'034	51'931	51'828	51'724	51'620	51'515	51'410	51'304
'1	52'665	52'564	52'463	52'361	52'258	52'155	52'052	51'948	51'844	51'739
'0	53'092	52'991	52'891	52'790	52'688	52'586	52'484	52'381	52'278	52'174
10'9	53'518	53'419	53'319	53'219	53'118	53'017	52'916	52'814	52'711	52'609
'8	53'945	53'846	53'747	53'648	53'548	53'448	53'348	53'247	53'145	53'043
'7	54'371	54'274	54'176	54'077	53'978	53'879	53'780	53'680	53'579	53'478
'6	54'797	54'701	54'604	54'506	54'409	54'310	54'212	54'113	54'013	53'913
'5	55'224	55'128	55'032	54'936	54'839	54'741	64'644	54'545	54'447	54'348
'4	55'650	55'556	55'460	55'365	55'269	55'172	55'076	54'978	54'881	54'783
'3	56'077	55'983	55'889	55'794	55'699	55'603	55'508	55'411	55'315	55'217
'2	56'503	56'410	56'317	56'223	56'129	56'034	55'940	55'844	55'748	55'652
'1	56'930	56'838	56'745	56'652	56'559	56'466	56'371	56'277	56'182	56'087
'0	57'356	57'265	57'173	57'082	56'989	56'897	56'803	56'710	56'616	56'522
9'9	57'783	57'692	57'602	57'511	57'419	57'328	57'235	57'143	57'050	56'957
'8	58'209	58'120	58'030	57'940	57'849	57'759	57'667	57'576	57'484	57'391
'7	58'635	58'547	58'458	58'369	58'280	58'190	58'099	58'009	57'918	57'826
'6	59'062	58'974	58'887	58'798	58'710	58'621	58'531	58'442	58'351	58'261
'5	59'488	59'402	59'315	59'227	59'140	59'052	58'963	58'874	58'785	58'696
'4	59'915	59'829	59'743	59'657	59'570	59'483	59'395	59'307	59'219	59'130
'3	60'341	60'256	60'171	60'086	60'000	59'914	59'827	59'740	59'653	59'565
'2	60'768	60'684	60'600	60'515	60'430	60'345	60'259	60'173	60'087	60'000
'1	61'194	61'111	61'028	60'944	60'860	60'776	60'691	60'606	60'521	60'435
'0	61'620	61'538	61'456	61'373	61'290	61'207	61'123	61'039	60'954	60'870
8'9	62'047	61'966	61'884	61'803	61'720	61'638	61'555	61'472	61'388	61'304
'8	62'473	62'393	62'313	62'232	62'151	62'069	61'987	61'905	61'822	61'739
'7	62'900	62'821	62'741	62'661	62'581	62'500	62'419	62'338	62'256	62'174
'6	63'326	63'248	63'169	63'090	63'011	62'931	62'851	62'771	62'690	62'609
'5	63'753	63'675	63'597	63'519	63'441	63'362	63'283	63'203	63'124	63'043
'4	64'179	64'103	64'026	63'948	63'871	63'793	63'715	63'636	63'557	63'478
'3	64'606	64'530	64'454	64'378	64'301	64'224	64'147	64'069	63'991	63'913
'2	65'032	64'957	64'882	64'807	64'731	64'655	64'579	64'502	64'425	64'348
'1	65'458	65'385	65'310	65'236	65'161	65'086	65'011	64'935	64'859	64'783
'0	65'885	65'812	65'739	65'665	65'591	65'517	65'443	65'368	65'293	65'217
7'9	66'311	66'239	66'167	66'094	66'022	65'948	65'875	65'801	65'727	65'652
'8	66'738	66'667	66'595	66'524	66'452	66'379	66'307	66'234	66'161	66'087
'7	67'164	67'094	67'024	66'953	66'882	66'810	66'739	66'667	66'594	66'522
'6	67'591	67'521	67'452	67'382	67'312	67'241	67'171	67'100	67'028	66'957
'5	68'017	67'949	67'880	67'811	67'742	67'672	67'603	67'532	67'462	67'391
'4	68'443	68'376	68'308	68'240	68'172	68'103	68'035	67'965	67'896	67'826
'3	68'870	68'803	68'737	68'670	68'602	68'534	68'467	68'398	68'330	68'261
'2	69'296	69'231	69'165	69'099	69'032	68'966	68'898	68'831	68'764	68'696
'1	69'723	69'658	69'593	69'528	69'462	69'397	69'330	69'264	69'197	69'130
'0	70'149	70'085	70'021	69'957	69'892	69'828	69'762	69'697	69'631	69'565



$1+a_x$ 

23	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
6'9	70'576	70'513	70'450	70'386	70'323	70'259	70'194	70'130	70'065	70'000
'8	71'002	70'940	70'878	70'815	70'753	70'690	70'626	70'563	70'499	70'435
'7	71'429	71'368	71'306	71'245	71'183	71'121	71'058	70'996	70'933	70'870
'6	71'855	71'795	71'734	71'674	71'613	71'552	71'490	71'429	71'367	71'304
'5	72'281	72'222	72'163	72'103	72'043	71'983	71'922	71'861	71'800	71'739
'4	72'708	72'650	72'591	72'532	72'473	72'414	72'354	72'294	72'234	72'174
'3	73'134	73'077	73'019	72'961	72'903	72'845	72'786	72'727	72'668	72'609
'2	73'561	73'504	73'448	73'391	73'333	73'276	73'218	73'160	73'102	73'043
'1	73'987	73'932	73'876	73'820	73'763	73'707	73'650	73'593	73'536	73'478
'0	74'414	74'359	74'304	74'249	74'194	74'138	74'082	74'026	73'970	73'913
5'9	74'840	74'786	74'732	74'678	74'624	74'569	74'514	74'459	74'403	74'348
'8	75'267	75'214	75'161	75'107	75'054	75'000	74'946	74'892	74'837	74'783
'7	75'693	75'641	75'589	75'536	75'484	75'431	75'378	75'325	75'271	75'217
'6	76'119	76'068	76'017	75'966	75'914	75'862	75'810	75'758	75'705	75'652
'5	76'546	76'496	76'445	76'395	76'344	76'293	76'242	76'190	76'139	76'087
'4	76'972	76'923	76'874	76'824	76'774	76'724	76'674	76'623	76'573	76'522
'3	77'399	77'350	77'302	77'253	77'204	77'155	77'106	77'056	77'007	76'957
'2	77'825	77'778	77'730	77'682	77'634	77'586	77'538	77'489	77'440	77'391
'1	78'252	78'205	78'158	78'112	78'065	78'017	77'970	77'922	77'874	77'826
'0	78'678	78'632	78'587	78'541	78'495	78'448	78'402	78'355	78'308	78'261
4'9	79'104	79'060	79'015	78'970	78'925	78'879	78'834	78'788	78'742	78'696
'8	79'531	79'487	79'443	79'399	79'355	79'310	79'266	79'221	79'176	79'130
'7	79'957	79'915	79'872	79'828	79'785	79'741	79'698	79'654	79'610	79'565
'6	80'384	80'342	80'300	80'258	80'215	80'172	80'130	80'087	80'043	80'000
'5	80'810	80'769	80'728	80'687	80'645	80'603	80'562	80'519	80'477	80'435
'4	81'237	81'197	81'156	81'116	81'075	81'034	80'994	80'952	80'911	80'870
'3	81'663	81'624	81'585	81'545	81'505	81'466	81'425	81'385	81'345	81'304
'2	82'090	82'051	82'013	81'974	81'935	81'897	81'857	81'818	81'779	81'739
'1	82'516	82'479	82'441	82'403	82'366	82'328	82'289	82'251	82'213	82'174
'0	82'942	82'906	82'869	82'833	82'796	82'759	82'721	82'684	82'646	82'609
3'9	83'369	83'333	83'298	83'262	83'226	83'190	83'153	83'117	83'080	83'043
'8	83'795	83'761	83'726	83'691	83'656	83'621	83'585	83'550	83'514	83'478
'7	84'222	84'188	84'154	84'120	84'086	84'052	84'017	83'983	83'948	83'913
'6	84'648	84'615	84'582	84'549	84'516	84'483	84'449	84'416	84'382	84'348
'5	85'075	85'043	85'011	84'979	84'946	84'914	84'881	84'848	84'816	84'783
'4	85'501	85'470	85'439	85'408	85'376	85'345	85'313	85'281	85'249	85'217
'3	85'927	85'897	85'867	85'837	85'806	85'776	85'745	85'714	85'683	85'652
'2	86'354	86'325	86'295	86'266	86'237	86'207	86'177	86'147	86'117	86'087
'1	86'780	86'752	86'724	86'695	86'667	86'638	86'609	86'580	86'551	86'522
'0	87'207	87'179	87'152	87'124	87'097	87'069	87'041	87'013	86'985	86'957
.01	.043	.043	.043	.043	.043	.043	.043	.043	.043	.043
.02	.085	.085	.086	.086	.086	.086	.086	.087	.087	.087
.03	.128	.128	.128	.129	.129	.129	.130	.130	.130	.130
.04	.171	.171	.171	.172	.172	.172	.173	.173	.174	.174
.05	.213	.214	.214	.215	.215	.216	.216	.216	.217	.217
.06	.256	.256	.257	.258	.258	.259	.259	.260	.260	.261
.07	.299	.299	.300	.300	.301	.302	.302	.303	.304	.304
.08	.341	.342	.343	.343	.344	.345	.346	.346	.347	.348
.09	.384	.385	.385	.386	.387	.388	.389	.390	.390	.391

$1+a_x$ 

23	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
2'9	87'633	87'607	87'580	87'554	87'527	87'500	87'473	87'446	87'419	87'391
'8	88'060	88'034	88'009	87'983	87'957	87'931	87'905	87'879	87'852	87'826
'7	88'486	88'462	88'437	88'412	88'387	88'362	88'337	88'312	88'286	88'261
'6	88'913	88'889	88'865	88'841	88'817	88'793	88'769	88'745	88'720	88'696
'5	89'339	89'316	89'293	89'270	89'247	89'224	89'201	89'177	89'154	89'130
'4	89'765	89'744	89'722	89'700	89'677	89'655	89'633	89'610	89'588	89'565
'3	90'192	90'171	90'150	90'129	90'108	90'086	90'065	90'043	90'022	90'000
'2	90'618	90'598	90'578	90'558	90'538	90'517	90'497	90'476	90'456	90'435
'1	91'045	91'026	91'006	90'987	90'968	90'948	90'929	90'909	90'889	90'870
'0	91'471	91'453	91'435	91'416	91'398	91'379	91'361	91'342	91'323	91'304
1'9	91'898	91'880	91'863	91'845	91'828	91'810	91'793	91'775	91'757	91'739
'8	92'324	92'308	92'291	92'275	92'258	92'241	92'225	92'208	92'191	92'174
'7	92'751	92'735	92'719	92'704	92'688	92'672	92'657	92'641	92'625	92'609
'6	93'177	93'162	93'148	93'133	93'118	93'103	93'089	93'074	93'059	93'043
'5	93'603	93'590	93'576	93'562	93'548	93'534	93'521	93'506	93'492	93'478
'4	94'030	94'017	94'004	93'991	93'978	93'966	93'952	93'939	93'926	93'913
'3	94'456	94'444	94'433	94'421	94'409	94'397	94'384	94'372	94'360	94'348
'2	94'883	94'872	94'861	94'850	94'839	94'828	94'816	94'805	94'794	94'783
'1	95'309	95'299	95'289	95'279	95'269	95'259	95'248	95'238	95'228	95'217
'0	95'736	95'726	95'717	95'708	95'699	95'690	95'680	95'671	95'662	95'652
'01	'043	'043	'043	'043	'043	'043	'043	'043	'043	'043
'02	'085	'085	'086	'086	'086	'086	'086	'087	'087	'087
'03	'128	'128	'128	'129	'129	'129	'130	'130	'130	'130
'04	'171	'171	'171	'172	'172	'172	'173	'173	'174	'174
'05	'213	'214	'214	'215	'215	'216	'216	'216	'217	'217
'06	'256	'256	'257	'258	'258	'259	'259	'260	'260	'261
'07	'299	'299	'300	'300	'301	'302	'302	'303	'304	'304
'08	'341	'342	'343	'343	'344	'345	'346	'346	'347	'348
'09	'384	'385	'385	'386	'387	'388	'389	'390	'390	'391
22	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
22'9	'218	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	'654	'437	'219	'000	'000	'000	'000	'000	'000	'000
'7	1'089	'873	'656	'439	'220	'000	'000	'000	'000	'000
'6	1'525	1'310	1'094	'877	'659	'441	'221	'000	'000	'000
'5	1'961	1'747	1'532	1'316	1'099	'881	'662	'442	'222	'000
'4	2'397	2'183	1'969	1'754	1'538	1'322	1'104	'885	'665	'444
'3	2'832	2'620	2'407	2'193	1'978	1'762	1'545	1'327	1'109	'889
'2	3'268	3'057	2'845	2'632	2'418	2'203	1'987	1'770	1'552	1'333
'1	3'704	3'493	3'282	3'070	2'857	2'643	2'428	2'212	1'996	1'778
'0	4'139	3'930	3'720	3'509	3'297	3'084	2'870	2'655	2'439	2'222
21'9	4'575	4'367	4'158	3'947	3'736	3'524	3'311	3'097	2'882	2'667
'8	5'011	4'803	4'595	4'386	4'176	3'965	3'753	3'540	3'326	3'111
'7	5'447	5'240	5'033	4'825	4'615	4'405	4'194	3'982	3'769	3'556
'6	5'882	5'677	5'470	5'263	5'055	4'846	4'636	4'425	4'213	4'000
'5	6'318	6'114	5'908	5'702	5'495	5'286	5'077	4'867	4'656	4'444

$$1+a_x$$

22	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1+a_{x+n}$										
21'4	6'754	6'550	6'346	6'140	5'934	5'727	5'519	5'310	5'100	4'889
'3	7'190	6'987	6'783	6'579	6'374	6'167	5'960	5'752	5'543	5'333
'2	7'625	7'424	7'221	7'018	6'813	6'608	6'402	6'195	5'987	5'778
'1	8'061	7'860	7'659	7'456	7'253	7'048	6'843	6'637	6'430	6'222
'0	8'497	8'297	8'096	7'895	7'692	7'489	7'285	7'080	6'874	6'667
20'9	8'932	8'734	8'534	8'333	8'132	7'930	7'726	7'522	7'317	7'111
'8	9'368	9'170	8'972	8'772	8'571	8'370	8'168	7'965	7'761	7'556
'7	9'804	9'607	9'409	9'211	9'011	8'811	8'609	8'407	8'204	8'000
'6	10'240	10'044	9'847	9'649	9'451	9'251	9'051	8'850	8'647	8'444
'5	10'675	10'480	10'284	10'088	9'890	9'692	9'492	9'292	9'091	8'889
'4	11'111	10'917	10'722	10'526	10'330	10'132	9'934	9'735	9'534	9'333
'3	11'547	11'354	11'160	10'965	10'769	10'573	10'375	10'177	9'978	9'778
'2	11'983	11'790	11'597	11'404	11'209	11'013	10'817	10'619	10'421	10'222
'1	12'418	12'227	12'035	11'842	11'648	11'454	11'258	11'062	10'865	10'667
'0	12'854	12'664	12'473	12'281	12'088	11'894	11'700	11'504	11'308	11'111
19'9	13'290	13'100	12'910	12'719	12'527	12'335	12'141	11'947	11'752	11'556
'8	13'725	13'537	13'348	13'158	12'967	12'775	12'583	12'389	12'195	12'000
'7	14'161	13'974	13'786	13'596	13'407	13'216	13'024	12'832	12'639	12'444
'6	14'597	14'410	14'223	14'035	13'846	13'656	13'466	13'274	13'082	12'889
'5	15'033	14'847	14'661	14'474	14'286	14'097	13'907	13'717	13'525	13'333
'4	15'468	15'284	15'098	14'912	14'725	14'537	14'349	14'159	13'969	13'778
'3	15'904	15'721	15'536	15'351	15'165	14'978	14'790	14'602	14'412	14'222
'2	16'340	16'157	15'974	15'789	15'604	15'419	15'232	15'044	14'856	14'667
'1	16'776	16'594	16'411	16'228	16'044	15'859	15'673	15'487	15'299	15'111
'0	17'211	17'031	16'849	16'667	16'484	16'300	16'115	15'929	15'743	15'556
18'9	17'647	17'467	17'287	17'105	16'923	16'740	16'556	16'372	16'186	16'000
'8	18'083	17'904	17'724	17'544	17'363	17'181	16'998	16'814	16'630	16'444
'7	18'519	18'341	18'162	17'982	17'802	17'621	17'439	17'257	17'073	16'889
'6	18'954	18'777	18'600	18'421	18'242	18'062	17'881	17'699	17'517	17'333
'5	19'390	19'214	19'037	18'860	18'681	18'502	18'322	18'142	17'960	17'778
'4	19'826	19'651	19'475	19'298	19'121	18'943	18'764	18'584	18'404	18'222
'3	20'261	20'087	19'912	19'737	19'560	19'383	19'205	19'027	18'847	18'667
'2	20'697	20'524	20'350	20'175	20'000	19'824	19'647	19'469	19'290	19'111
'1	21'133	20'961	20'788	20'614	20'440	20'264	20'088	19'912	19'734	19'556
'0	21'569	21'397	21'225	21'053	20'879	20'705	20'530	20'354	20'177	20'000
17'9	22'004	21'834	21'663	21'491	21'319	21'145	20'971	20'796	20'621	20'444
'8	22'440	22'271	22'101	21'930	21'758	21'586	21'413	21'239	21'064	20'889
'7	22'876	22'707	22'538	22'368	22'198	22'026	21'854	21'681	21'508	21'333
'6	23'312	23'144	22'976	22'807	22'637	22'467	22'296	22'124	21'951	21'778
'5	23'747	23'581	23'414	23'246	23'077	22'907	22'737	22'566	22'395	22'222
'01	'044	'044	'044	'044	'044	'044	'044	'044	'044	'044
'02	'087	'087	'088	'088	'088	'088	'088	'088	'089	'089
'03	'131	'131	'131	'132	'132	'132	'132	'133	'133	'133
'04	'174	'175	'175	'175	'176	'176	'177	'177	'177	'178
'05	'218	'218	'219	'219	'220	'220	'221	'221	'222	'222
'06	'261	'262	'263	'263	'264	'264	'265	'265	'266	'267
'07	'305	'306	'306	'307	'308	'308	'309	'310	'310	'311
'08	'349	'349	'350	'351	'352	'352	'353	'354	'355	'356
'09	'392	'393	'394	'395	'396	'396	'397	'398	'399	'400



22	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
17.4	24'183	24'017	23'851	23'684	23'516	23'348	23'179	23'009	22'838	22'667
3	24'619	24'454	24'289	24'123	23'956	23'789	23'620	23'451	23'282	23'111
2	25'054	24'891	24'726	24'561	24'396	24'229	24'062	23'894	23'725	23'556
1	25'490	25'328	25'164	25'000	24'835	24'670	24'503	24'336	24'169	24'000
0	25'926	25'764	25'602	25'439	25'275	25'110	24'945	24'779	24'612	24'444
16.9	26'362	26'201	26'039	25'877	25'714	25'551	25'386	25'221	25'055	24'889
8	26'797	26'638	26'477	26'316	26'154	25'991	25'828	25'664	25'499	25'333
7	27'233	27'074	26'915	26'754	26'593	26'432	26'269	26'106	25'942	25'778
6	27'669	27'511	27'352	27'193	27'033	26'872	26'711	26'549	26'386	26'222
5	28'105	27'948	27'790	27'632	27'473	27'313	27'152	26'991	26'829	26'667
4	28'540	28'384	28'228	28'070	27'912	27'753	27'594	27'434	27'273	27'111
3	28'976	28'821	28'665	28'509	28'352	28'194	28'035	27'876	27'716	27'556
2	29'412	29'258	29'103	28'947	28'791	28'634	28'477	28'319	28'160	28'000
1	29'847	29'694	29'540	29'386	29'231	29'075	28'918	28'761	28'603	28'444
0	30'283	30'131	29'978	29'825	29'670	29'515	29'360	29'204	29'047	28'889
15.9	30'719	30'568	30'416	30'263	30'110	29'956	29'801	29'646	29'490	29'333
8	31'155	31'004	30'853	30'702	30'549	30'396	30'243	30'088	29'933	29'778
7	31'590	31'441	31'291	31'140	30'989	30'837	30'684	30'531	30'377	30'222
6	32'026	31'878	31'729	31'579	31'429	31'278	31'126	30'973	30'820	30'667
5	32'462	32'314	32'166	32'018	31'868	31'718	31'567	31'416	31'264	31'111
4	32'898	32'751	32'604	32'456	32'308	32'159	32'009	31'858	31'707	31'556
3	33'333	33'188	33'042	32'895	32'747	32'599	32'450	32'301	32'151	32'000
2	33'769	33'624	33'479	33'333	33'187	33'040	32'892	32'743	32'594	32'444
1	34'205	34'061	33'917	33'772	33'626	33'480	33'333	33'186	33'038	32'889
0	34'641	34'498	34'354	34'211	34'066	33'921	33'775	33'628	33'481	33'333
14.9	35'076	34'934	34'792	34'649	34'505	34'361	34'216	34'071	33'925	33'778
8	35'512	35'371	35'230	35'088	34'945	34'802	34'658	34'513	34'368	34'222
7	35'948	35'808	35'667	35'526	35'385	35'242	35'099	34'956	34'812	34'667
6	36'383	36'245	36'105	35'965	35'824	35'683	35'541	35'398	35'255	35'111
5	36'819	36'681	36'543	36'404	36'264	36'123	35'982	35'841	35'698	35'556
4	37'255	37'118	36'980	36'842	36'703	36'564	36'424	36'283	36'142	36'000
3	37'691	37'555	37'418	37'281	37'143	37'004	36'865	36'726	36'585	36'444
2	38'126	37'991	37'856	37'719	37'582	37'445	37'307	37'168	37'029	36'889
1	38'562	38'428	38'293	38'158	38'022	37'885	37'748	37'611	37'472	37'333
0	38'998	38'865	38'731	38'596	38'462	38'326	38'190	38'053	37'916	37'778
13.9	39'434	39'301	39'168	39'035	38'901	38'767	38'631	38'496	38'359	38'222
8	39'869	39'738	39'606	39'474	39'341	39'207	39'073	38'938	38'803	38'667
7	40'305	40'175	40'044	39'912	39'780	39'648	39'514	39'381	39'246	39'111
6	40'741	40'611	40'481	40'351	40'220	40'088	39'956	39'823	39'690	39'556
5	41'176	41'048	40'919	40'789	40'659	40'529	40'397	40'265	40'133	40'000
4	41'612	41'485	41'357	41'228	41'099	40'969	40'839	40'708	40'576	40'444
3	42'048	41'921	41'794	41'667	41'538	41'410	41'280	41'150	41'020	40'889
2	42'484	42'358	42'232	42'105	41'978	41'850	41'722	41'593	41'463	41'333
1	42'919	42'795	42'670	42'544	42'418	42'291	42'163	42'035	41'907	41'778
0	43'355	43'231	43'107	42'982	42'857	42'731	42'605	42'478	42'350	42'222
12.9	43'791	43'668	43'545	43'421	43'297	43'172	43'046	42'920	42'794	42'667
8	44'227	44'105	43'982	43'860	43'736	43'612	43'488	43'363	43'237	43'111
7	44'662	44'541	44'420	44'298	44'176	44'053	43'929	43'805	43'681	43'556
6	45'098	44'978	44'858	44'737	44'615	44'493	44'371	44'248	44'124	44'000
5	45'534	45'415	45'295	45'175	45'055	44'934	44'812	44'690	44'568	44'444

$$1 + a_x$$

22	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
12'4	45'969	45'852	45'733	45'614	45'495	45'374	45'254	45'133	45'011	44'889
'3	46'405	46'288	46'171	46'053	45'934	45'815	45'695	45'575	45'455	45'333
'2	46'841	46'725	46'608	46'491	46'374	46'256	46'137	46'018	45'898	45'778
'1	47'277	47'162	47'046	46'930	46'813	46'696	46'578	46'460	46'341	46'222
'0	47'712	47'598	47'484	47'368	47'253	47'137	47'020	46'903	46'785	46'667
11'9	48'148	48'035	47'921	47'807	47'692	47'577	47'461	47'345	47'228	47'111
'8	48'584	48'472	48'359	48'246	48'132	48'018	47'903	47'788	47'672	47'556
'7	49'020	48'908	48'797	48'684	48'571	48'458	48'344	48'230	48'115	48'000
'6	49'455	49'345	49'234	49'123	49'011	48'899	48'786	48'673	48'559	48'444
'5	49'891	49'782	49'672	49'561	49'451	49'339	49'227	49'115	49'002	48'889
'4	50'327	50'218	50'109	50'000	49'890	49'780	49'669	49'558	49'446	49'333
'3	50'763	50'655	50'547	50'439	50'330	50'220	50'110	50'000	49'889	49'778
'2	51'198	51'092	50'985	50'877	50'769	50'661	50'552	50'442	50'333	50'222
'1	51'634	51'528	51'422	51'316	51'209	51'101	50'993	50'885	50'776	50'667
'0	52'070	51'965	51'860	51'754	51'648	51'542	51'435	51'327	51'220	51'111
10'9	52'505	52'402	52'298	52'193	52'088	51'982	51'876	51'770	51'663	51'556
'8	52'941	52'838	52'735	52'632	52'527	52'423	52'318	52'212	52'106	52'000
'7	53'377	53'275	53'173	53'070	52'967	52'863	52'759	52'655	52'550	52'444
'6	53'813	53'712	53'611	53'509	53'407	53'304	53'201	53'097	52'993	52'889
'5	54'248	54'148	54'048	53'947	53'846	53'744	53'642	53'540	53'437	53'333
'4	54'684	54'585	54'486	54'386	54'286	54'185	54'084	53'982	53'880	53'778
'3	55'120	55'022	54'923	54'825	54'725	54'626	54'525	54'425	54'324	54'222
'2	55'556	55'459	55'361	55'263	55'165	55'066	54'967	54'867	54'767	54'667
'1	55'991	55'895	55'799	55'702	55'604	55'507	55'408	55'310	55'211	55'111
'0	56'427	56'332	56'236	56'140	56'044	55'947	55'850	55'752	55'654	55'556
9'9	56'863	56'769	56'674	56'579	56'484	56'388	56'291	56'195	56'098	56'000
'8	57'298	57'205	57'112	57'018	56'923	56'828	56'733	56'637	56'541	56'444
'7	57'734	57'642	57'549	57'456	57'363	57'269	57'174	57'080	56'984	56'889
'6	58'170	58'079	57'987	57'895	57'802	57'709	57'616	57'522	57'428	57'333
'5	58'606	58'515	58'425	58'333	58'242	58'150	58'057	57'965	57'871	57'778
'4	59'041	58'952	58'862	58'772	58'681	58'590	58'499	58'407	58'315	58'222
'3	59'477	59'389	59'300	59'211	59'121	59'031	58'940	58'850	58'758	58'667
'2	59'913	59'825	59'737	59'649	59'560	59'471	59'382	59'292	59'202	59'111
'1	60'349	60'262	60'175	60'088	60'000	59'912	59'823	59'735	59'645	59'556
'0	60'784	60'699	60'613	60'526	60'440	60'352	60'265	60'177	60'089	60'000
8'9	61'220	61'135	61'050	60'965	60'879	60'793	60'706	60'619	60'532	60'444
'8	61'656	61'572	61'488	61'404	61'319	61'233	61'148	61'062	60'976	60'889
'7	62'091	62'009	61'926	61'842	61'758	61'674	61'589	61'504	61'419	61'333
'6	62'527	62'445	62'363	62'281	62'198	62'115	62'031	61'947	61'863	61'778
'5	62'963	62'882	62'801	62'719	62'637	62'555	62'472	62'389	62'306	62'222
'01	'044	'044	'044	'044	'044	'044	'044	'044	'044	'044
'02	'087	'087	'088	'088	'088	'088	'088	'088	'089	'089
'03	'131	'131	'131	'132	'132	'132	'132	'133	'133	'133
'04	'174	'175	'175	'175	'176	'176	'177	'177	'177	'178
'05	'218	'218	'219	'219	'220	'220	'221	'221	'222	'222
'06	'261	'262	'263	'263	'264	'264	'265	'265	'266	'267
'07	'305	'306	'306	'307	'308	'308	'309	'310	'310	'311
'08	'349	'349	'350	'351	'352	'352	'353	'354	'355	'356
'09	'392	'393	'394	'395	'396	'396	'397	'398	'399	'400



$1 + a_x$ 

22	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
8·4	63'399	63'319	63'239	63'158	63'077	62'996	62'914	62'832	62'749	62'667
·3	63'834	63'755	63'676	63'596	63'516	63'436	63'355	63'274	63'193	63'111
·2	64'270	64'192	64'114	64'035	63'956	63'877	63'797	63'717	63'636	63'556
·1	64'706	64'629	64'551	64'474	64'396	64'317	64'238	64'159	64'080	64'000
·0	65'142	65'065	64'989	64'912	64'835	64'758	64'680	64'602	64'523	64'444
7·9	65'577	65'502	65'427	65'351	65'275	65'198	65'121	65'044	64'967	64'889
·8	66'013	65'939	65'864	65'789	65'714	65'639	65'563	65'487	65'410	65'333
·7	66'449	66'376	66'302	66'228	66'154	66'079	66'004	65'929	65'854	65'778
·6	66'885	66'812	66'740	66'667	66'593	66'520	66'446	66'372	66'297	66'222
·5	67'320	67'249	67'177	67'105	67'033	66'960	66'887	66'814	66'741	66'667
·4	67'756	67'686	67'615	67'544	67'473	67'401	67'329	67'257	67'184	67'111
·3	68'192	68'122	68'053	67'982	67'912	67'841	67'770	67'699	67'627	67'556
·2	68'627	68'559	68'490	68'421	68'352	68'282	68'212	68'142	68'071	68'000
·1	69'063	68'996	68'928	68'860	68'791	68'722	68'653	68'584	68'514	68'444
·0	69'499	69'432	69'365	69'298	69'231	69'163	69'095	69'027	68'958	68'889
6·9	69'935	69'869	69'803	69'737	69'670	69'604	69'536	69'469	69'401	69'333
·8	70'370	70'306	70'241	70'175	70'110	70'044	69'978	69'912	69'845	69'778
·7	70'806	70'742	70'678	70'614	70'549	70'485	70'419	70'354	70'288	70'222
·6	71'242	71'179	71'116	71'053	70'989	70'925	70'861	70'796	70'732	70'667
·5	71'678	71'616	71'554	71'491	71'429	71'366	71'302	71'239	71'175	71'111
·4	72'113	72'052	71'991	71'930	71'868	71'806	71'744	71'681	71'619	71'556
·3	72'549	72'489	72'429	72'368	72'308	72'247	72'185	72'124	72'062	72'000
·2	72'985	72'926	72'867	72'807	72'747	72'687	72'627	72'566	72'506	72'444
·1	73'420	73'362	73'304	73'246	73'187	73'128	73'068	73'009	72'949	72'889
·0	73'856	73'799	73'742	73'684	73'626	73'568	73'510	73'451	73'392	73'333
5·9	74'292	74'236	74'179	74'123	74'066	74'009	73'951	73'894	73'836	73'778
·8	74'728	74'672	74'617	74'561	74'505	74'449	74'393	74'336	74'279	74'222
·7	75'163	75'109	75'055	75'000	74'945	74'890	74'834	74'779	74'723	74'667
·6	75'599	75'546	75'492	75'439	75'385	75'330	75'276	75'221	75'166	75'111
·5	76'035	75'983	75'930	75'877	75'824	75'771	75'717	75'664	75'610	75'556
·4	76'471	76'419	76'368	76'316	76'264	76'211	76'159	76'106	76'053	76'000
·3	76'906	76'856	76'805	76'754	76'703	76'652	76'600	76'549	76'497	76'444
·2	77'342	77'293	77'243	77'193	77'143	77'093	77'042	76'991	76'940	76'889
·1	77'778	77'729	77'681	77'632	77'582	77'533	77'483	77'434	77'384	77'333
·0	78'213	78'166	78'118	78'070	78'022	77'974	77'925	77'876	77'827	77'778
4·9	78'649	78'603	78'556	78'509	78'462	78'414	78'366	78'319	78'271	78'222
·8	79'085	79'039	78'993	78'947	78'901	78'855	78'808	78'761	78'714	78'667
·7	79'521	79'476	79'431	79'386	79'341	79'295	79'249	79'204	79'157	79'111
·6	79'956	79'913	79'869	79'825	79'780	79'736	79'691	79'646	79'601	79'556
·5	80'392	80'349	80'306	80'263	80'220	80'176	80'132	80'088	80'044	80'000
·4	80'828	80'786	80'744	80'702	80'659	80'617	80'574	80'531	80'488	80'444
·3	81'264	81'223	81'182	81'140	81'099	81'057	81'015	80'973	80'931	80'889
·2	81'699	81'659	81'619	81'579	81'538	81'498	81'457	81'416	81'375	81'333
·1	82'135	82'096	82'057	82'018	81'978	81'938	81'898	81'858	81'818	81'778
·0	82'571	82'533	82'495	82'456	82'418	82'379	82'340	82'301	82'262	82'222

$1 + a_x$ 

22	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
3'9	83'007	82'969	82'932	82'895	82'857	82'819	82'781	82'743	82'705	82'667
'8	83'442	83'406	83'370	83'333	83'297	83'260	83'223	83'186	83'149	83'111
'7	83'878	83'843	83'807	83'772	83'736	83'700	83'664	83'628	83'592	83'556
'6	84'314	84'279	84'245	84'211	84'176	84'141	84'106	84'071	84'035	84'000
'5	84'749	84'716	84'683	84'649	84'615	84'581	84'547	84'513	84'479	84'444
'4	85'185	85'153	85'120	85'088	85'055	85'022	84'989	84'956	84'922	84'889
'3	85'621	85'590	85'558	85'526	85'494	85'463	85'430	85'398	85'366	85'333
'2	86'057	86'026	85'996	85'965	85'934	85'903	85'872	85'841	85'809	85'778
'1	86'492	86'463	86'433	86'404	86'374	86'344	86'313	86'283	86'253	86'222
'0	86'928	86'900	86'871	86'842	86'813	86'784	86'755	86'726	86'696	86'667
2'9	87'364	87'336	87'309	87'281	87'253	87'225	87'196	87'168	87'140	87'111
'8	87'800	87'773	87'746	87'719	87'692	87'665	87'638	87'611	87'583	87'556
'7	88'235	88'210	88'184	88'158	88'132	88'106	88'079	88'053	88'027	88'000
'6	88'671	88'646	88'621	88'596	88'571	88'546	88'521	88'496	88'470	88'444
'5	89'107	89'083	89'059	89'035	89'011	88'987	88'962	88'938	88'914	88'889
'4	89'542	89'520	89'497	89'474	89'451	89'427	89'404	89'381	89'357	89'333
'3	89'978	89'956	89'934	89'912	89'890	89'868	89'845	89'823	89'800	89'778
'2	90'414	90'393	90'372	90'351	90'330	90'308	90'287	90'265	90'244	90'222
'1	90'850	90'830	90'810	90'789	90'769	90'749	90'728	90'708	90'687	90'667
'0	91'285	91'266	91'247	91'228	91'209	91'189	91'170	91'150	91'131	91'111
1'9	91'721	91'703	91'685	91'667	91'648	91'630	91'611	91'593	91'574	91'556
'8	92'157	92'140	92'123	92'105	92'088	92'070	92'053	92'035	92'018	92'000
'7	92'593	92'576	92'560	92'544	92'527	92'511	92'494	92'478	92'461	92'444
'6	93'028	93'013	92'998	92'982	92'967	92'952	92'936	92'920	92'905	92'889
'5	93'464	93'450	93'435	93'421	93'407	93'392	93'377	93'363	93'348	93'333
'4	93'900	93'886	93'873	93'860	93'846	93'833	93'819	93'805	93'792	93'778
'3	94'336	94'323	94'311	94'298	94'286	94'273	94'260	94'248	94'235	94'222
'2	94'771	94'760	94'748	94'737	94'725	94'714	94'702	94'690	94'678	94'667
'1	95'207	95'197	95'186	95'175	95'165	95'154	95'143	95'133	95'122	95'111
'0	95'643	95'633	95'624	95'614	95'604	95'595	95'585	95'575	95'565	95'556
'01	'014	'014	'014	'014	'014	'044	'044	'044	'044	'044
'02	'087	'087	'088	'088	'088	'088	'088	'088	'089	'089
'03	'131	'131	'131	'132	'132	'132	'132	'133	'133	'133
'04	'174	'175	'175	'175	'176	'176	'177	'177	'177	'178
'05	'218	'218	'219	'219	'220	'220	'221	'221	'222	'222
'06	'261	'262	'263	'263	'264	'264	'265	'265	'266	'267
'07	'305	'306	'306	'307	'308	'308	'309	'310	'310	'311
'08	'349	'349	'350	'351	'352	'352	'353	'354	'355	'356
'09	'392	'393	'394	'395	'396	'396	'397	'398	'399	'400

$1 + a_x$ 

22	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
22.4	'223	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	'668	'446	'224	'000	'000	'000	'000	'000	'000	'000
'2	1'114	'893	'671	'448	'225	'000	'000	'000	'000	'000
'1	1'559	1'339	1'119	'897	'674	'450	'226	'000	'000	'000
'0	2'004	1'786	1'566	1'345	1'124	'901	'677	'452	'227	'000
21.9	2'450	2'232	2'013	1'794	1'573	1'351	1'129	'905	'680	'455
'8	2'895	2'679	2'461	2'242	2'022	1'802	1'580	1'357	1'134	'909
'7	3'341	3'125	2'908	2'691	2'472	2'252	2'032	1'810	1'587	1'364
'6	3'786	3'571	3'356	3'139	2'921	2'703	2'483	2'262	2'041	1'818
'5	4'232	4'018	3'803	3'587	3'371	3'153	2'935	2'715	2'494	2'273
'4	4'677	4'464	4'251	4'036	3'820	3'604	3'386	3'167	2'948	2'727
'3	5'122	4'911	4'698	4'484	4'270	4'054	3'837	3'620	3'401	3'182
'2	5'568	5'357	5'145	4'933	4'719	4'505	4'289	4'072	3'855	3'636
'1	6'013	5'804	5'593	5'381	5'169	4'955	4'740	4'525	4'308	4'091
'0	6'459	6'250	6'040	5'830	5'618	5'405	5'192	4'977	4'762	4'545
20.9	6'904	6'696	6'488	6'278	6'067	5'856	5'643	5'430	5'215	5'000
'8	7'350	7'143	6'935	6'726	6'517	6'306	6'095	5'882	5'669	5'455
'7	7'795	7'589	7'383	7'175	6'966	6'757	6'546	6'335	6'122	5'909
'6	8'241	8'036	7'830	7'623	7'416	7'207	6'998	6'787	6'576	6'364
'5	8'686	8'482	8'277	8'072	7'865	7'658	7'449	7'240	7'029	6'818
'4	9'131	8'929	8'725	8'520	8'315	8'108	7'901	7'692	7'483	7'273
'3	9'577	9'375	9'172	8'969	8'764	8'559	8'352	8'145	7'937	7'727
'2	10'022	9'821	9'620	9'417	9'213	9'009	8'804	8'597	8'390	8'182
'1	10'468	10'268	10'067	9'865	9'663	9'459	9'255	9'050	8'844	8'636
'0	10'913	10'714	10'515	10'314	10'112	9'910	9'707	9'502	9'297	9'091
19.9	11'359	11'161	10'962	10'762	10'562	10'360	10'158	9'955	9'751	9'545
'8	11'804	11'607	11'409	11'211	11'011	10'811	10'609	10'407	10'204	10'000
'7	12'249	12'054	11'857	11'659	11'461	11'261	11'061	10'860	10'658	10'455
'6	12'695	12'500	12'304	12'108	11'910	11'712	11'512	11'312	11'111	10'909
'5	13'140	12'946	12'752	12'556	12'360	12'162	11'964	11'765	11'565	11'364
'4	13'586	13'393	13'199	13'004	12'809	12'613	12'415	12'217	12'018	11'818
'3	14'031	13'839	13'647	13'453	13'258	13'063	12'867	12'670	12'472	12'273
'2	14'477	14'286	14'094	13'901	13'708	13'514	13'318	13'122	12'925	12'727
'1	14'922	14'732	14'541	14'350	14'157	13'964	13'770	13'575	13'379	13'182
'0	15'367	15'179	14'989	14'798	14'607	14'414	14'221	14'027	13'832	13'636
18.9	15'813	15'625	15'436	15'247	15'056	14'865	14'673	14'480	14'286	14'091
'8	16'258	16'071	15'884	15'695	15'506	15'315	15'124	14'932	14'739	14'545
'7	16'704	16'518	16'331	16'143	15'955	15'766	15'576	15'385	15'193	15'000
'6	17'149	16'964	16'779	16'592	16'404	16'216	16'027	15'837	15'646	15'455
'5	17'595	17'411	17'226	17'040	16'854	16'667	16'479	16'290	16'100	15'909
'4	18'040	17'857	17'673	17'489	17'303	17'117	16'930	16'742	16'553	16'364
'3	18'486	18'304	18'121	17'937	17'753	17'568	17'381	17'195	17'007	16'818
'2	18'931	18'750	18'568	18'386	18'202	18'018	17'833	17'647	17'460	17'273
'1	19'376	19'196	19'016	18'834	18'652	18'468	18'284	18'100	17'914	17'727
'0	19'822	19'643	19'463	19'283	19'101	18'919	18'736	18'552	18'367	18'182
17.9	20'267	20'089	19'911	19'731	19'551	19'369	19'187	19'005	18'821	18'636
'8	20'713	20'536	20'358	20'179	20'000	19'820	19'639	19'457	19'274	19'091
'7	21'158	20'982	20'805	20'628	20'449	20'270	20'090	19'910	19'728	19'545
'6	21'604	21'429	21'253	21'076	20'899	20'721	20'542	20'362	20'181	20'000
'5	22'049	21'875	21'700	21'525	21'348	21'171	20'993	20'814	20'635	20'455



$1+a_x$

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
17'4	22'494	22'321	22'148	21'973	21'798	21'622	21'445	21'267	21'088	20'909
'3	22'940	22'768	22'595	22'422	22'247	22'072	21'896	21'719	21'542	21'364
'2	23'385	23'214	23'043	22'870	22'697	22'523	22'348	22'172	21'995	21'818
'1	23'831	23'661	23'490	23'318	23'146	22'973	22'799	22'624	22'449	22'273
'0	24'276	24'107	23'937	23'767	23'596	23'423	23'251	23'077	22'902	22'727
16'9	24'722	24'554	24'385	24'215	24'045	23'874	23'702	23'529	23'356	23'182
'8	25'167	25'000	24'832	24'664	24'494	24'324	24'154	23'982	23'810	23'636
'7	25'612	25'446	25'280	25'112	24'944	24'775	24'605	24'434	24'263	24'091
'6	26'058	25'893	25'727	25'561	25'393	25'225	25'056	24'887	24'717	24'545
'5	26'503	26'339	26'174	26'009	25'843	25'676	25'508	25'339	25'170	25'000
'4	26'949	26'786	26'622	26'457	26'292	26'126	25'959	25'792	25'624	25'455
'3	27'394	27'232	27'069	26'906	26'742	26'577	26'411	26'244	26'077	25'909
'2	27'840	27'679	27'517	27'354	27'191	27'027	26'862	26'697	26'531	26'364
'1	28'285	28'125	27'964	27'803	27'640	27'477	27'314	27'149	26'984	26'818
'0	28'731	28'571	28'412	28'251	28'090	27'928	27'765	27'602	27'438	27'273
15'9	29'176	29'018	28'859	28'700	28'539	28'378	28'217	28'054	27'891	27'727
'8	29'621	29'464	29'306	29'148	28'989	28'829	28'668	28'507	28'345	28'182
'7	30'067	29'911	29'754	29'596	29'438	29'279	29'120	28'959	28'798	28'636
'6	30'512	30'357	30'201	30'045	29'888	29'730	29'571	29'412	29'252	29'091
'5	30'958	30'804	30'649	30'493	30'337	30'180	30'023	29'864	29'705	29'545
'4	31'403	31'250	31'096	30'942	30'787	30'631	30'474	30'317	30'159	30'000
'3	31'849	31'696	31'544	31'390	31'236	31'081	30'926	30'769	30'612	30'455
'2	32'294	32'143	31'991	31'839	31'685	31'532	31'377	31'222	31'066	30'909
'1	32'739	32'589	32'438	32'287	32'135	31'982	31'828	31'674	31'519	31'364
'0	33'185	33'036	32'886	32'735	32'584	32'432	32'280	32'127	31'973	31'818
14'9	33'630	33'482	33'333	33'184	33'034	32'883	32'731	32'579	32'426	32'273
'8	34'076	33'929	33'781	33'632	33'483	33'333	33'183	33'032	32'880	32'727
'7	34'521	34'375	34'228	34'081	33'933	33'784	33'634	33'484	33'333	33'182
'6	34'967	34'821	34'676	34'529	34'382	34'234	34'086	33'937	33'787	33'636
'5	35'412	35'268	35'123	34'978	34'831	34'685	34'537	34'389	34'240	34'091
'4	35'857	35'714	35'570	35'426	35'281	35'135	34'989	34'842	34'694	34'545
'3	36'303	36'161	36'018	35'874	35'730	35'586	35'440	35'294	35'147	35'000
'2	36'748	36'607	36'465	36'323	36'180	36'036	35'892	35'747	35'601	35'455
'1	37'194	37'054	36'913	36'771	36'629	36'486	36'343	36'199	36'054	35'909
'0	37'639	37'500	37'360	37'220	37'079	36'937	36'795	36'652	36'508	36'364
13'9	38'085	37'946	37'808	37'668	37'528	37'387	37'246	37'104	36'961	36'818
'8	38'530	38'393	38'255	38'117	37'978	37'838	37'698	37'557	37'415	37'273
'7	38'976	38'839	38'702	38'565	38'427	38'288	38'149	38'009	37'868	37'727
'6	39'421	39'286	39'150	39'013	38'876	38'739	38'600	38'462	38'322	38'182
'5	39'866	39'732	39'597	39'462	39'326	39'189	39'052	38'914	38'776	38'636
'01	·045	·045	·045	·045	·045	·045	·045	·045	·045	·045
'02	·089	·089	·089	·090	·090	·090	·090	·090	·091	·091
'03	·134	·134	·134	·135	·135	·135	·135	·136	·136	·136
'04	·178	·179	·179	·179	·180	·180	·181	·181	·181	·182
'05	·223	·223	·224	·224	·225	·225	·226	·226	·227	·227
'06	·267	·268	·268	·269	·270	·270	·271	·271	·272	·273
'07	·312	·313	·313	·314	·315	·315	·316	·317	·317	·318
'08	·356	·357	·358	·359	·360	·360	·361	·362	·363	·364
'09	·401	·402	·403	·404	·404	·405	·406	·407	·408	·409



$1 + a_x$ 

22	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
13'4	40'312	40'179	40'045	39'910	39'775	39'640	39'503	39'367	39'229	39'091
'3	40'757	40'625	40'492	40'359	40'225	40'090	39'955	39'819	39'683	39'545
'2	41'203	41'071	40'940	40'807	40'674	40'541	40'406	40'271	40'136	40'000
'1	41'648	41'518	41'387	41'256	41'124	40'991	40'858	40'724	40'590	40'455
'0	42'094	41'964	41'834	41'704	41'573	41'441	41'309	41'176	41'043	40'909
12'9	42'539	42'411	42'282	42'152	42'022	41'892	41'761	41'629	41'497	41'364
'8	42'984	42'857	42'729	42'601	42'472	42'342	42'212	42'081	41'950	41'818
'7	43'430	43'304	43'177	43'049	42'921	42'793	42'664	42'534	42'404	42'273
'6	43'875	43'750	43'624	43'498	43'371	43'243	43'115	42'986	42'857	42'727
'5	44'321	44'196	44'072	43'946	43'820	43'694	43'567	43'439	43'311	43'182
'4	44'766	44'643	44'519	44'395	44'270	44'144	44'018	43'891	43'764	43'636
'3	45'212	45'089	44'966	44'843	44'719	44'595	44'470	44'344	44'218	44'091
'2	45'657	45'536	45'414	45'291	45'169	45'045	44'921	44'796	44'671	44'545
'1	46'102	45'982	45'861	45'740	45'618	45'496	45'372	45'249	45'125	45'000
'0	46'548	46'429	46'309	46'188	46'067	45'946	45'824	45'701	45'578	45'455
11'9	46'993	46'875	46'756	46'637	46'517	46'396	46'275	46'154	46'032	45'909
'8	47'439	47'321	47'204	47'085	46'966	46'847	46'727	46'606	46'485	46'364
'7	47'884	47'768	47'651	47'534	47'416	47'297	47'178	47'059	46'939	46'818
'6	48'330	48'214	48'098	47'982	47'865	47'748	47'630	47'511	47'392	47'273
'5	48'775	48'661	48'546	48'430	48'315	48'198	48'081	47'964	47'846	47'727
'4	49'220	49'107	48'993	48'879	48'764	48'649	48'533	48'416	48'299	48'182
'3	49'666	49'554	49'441	49'327	49'213	49'099	48'984	48'869	48'753	48'636
'2	50'111	50'000	49'888	49'776	49'663	49'550	49'436	49'321	49'206	49'091
'1	50'557	50'446	50'336	50'224	50'112	50'000	49'887	49'774	49'660	49'545
'0	51'002	50'893	50'783	50'673	50'562	50'450	50'339	50'226	50'113	50'000
10'9	51'448	51'339	51'230	51'121	51'011	50'901	50'790	50'679	50'567	50'455
'8	51'893	51'786	51'678	51'570	51'461	51'351	51'242	51'131	51'020	50'909
'7	52'339	52'232	52'125	52'018	51'910	51'802	51'693	51'584	51'474	51'364
'6	52'784	52'679	52'573	52'466	52'360	52'252	52'144	52'036	51'927	51'818
'5	53'229	53'125	53'020	52'915	52'809	52'703	52'596	52'489	52'381	52'273
'4	53'675	53'571	53'468	53'363	53'258	53'153	53'047	52'941	52'834	52'727
'3	54'120	54'018	53'915	53'812	53'708	53'604	53'499	53'394	53'288	53'182
'2	54'566	54'464	54'362	54'260	54'157	54'054	53'950	53'846	53'741	53'636
'1	55'011	54'911	54'810	54'709	54'607	54'505	54'402	54'299	54'195	54'091
'0	55'457	55'357	55'257	55'157	55'056	54'955	54'853	54'751	54'649	54'545
9'9	55'902	55'804	55'705	55'605	55'506	55'405	55'305	55'204	55'102	55'000
'8	56'347	56'250	56'152	56'054	55'955	55'856	55'756	55'656	55'556	55'455
'7	56'793	56'696	56'600	56'502	56'404	56'306	56'208	56'109	56'009	55'909
'6	57'238	57'143	57'047	56'951	56'854	56'757	56'659	56'561	56'463	56'364
'5	57'684	57'589	57'494	57'399	57'303	57'207	57'111	57'014	56'916	56'818
'4	58'129	58'036	57'942	57'848	57'753	57'658	57'562	57'466	57'370	57'273
'3	58'575	58'482	58'389	58'296	58'202	58'108	58'014	57'919	57'823	57'727
'2	59'020	58'929	58'837	58'744	58'652	58'559	58'465	58'371	58'277	58'182
'1	59'465	59'375	59'284	59'193	59'101	59'009	58'916	58'824	58'730	58'636
'0	59'911	59'821	59'732	59'641	59'551	59'459	59'368	59'276	59'184	59'091
8'9	60'356	60'268	60'179	60'090	60'000	59'910	59'819	59'729	59'637	59'545
'8	60'802	60'714	60'626	60'538	60'449	60'360	60'271	60'181	60'091	60'000
'7	61'247	61'161	61'074	60'987	60'899	60'811	60'722	60'633	60'544	60'455
'6	61'693	61'607	61'521	61'435	61'348	61'261	61'174	61'086	60'998	60'909
'5	62'138	62'054	61'969	61'883	61'798	61'712	61'625	61'538	61'451	61'364

$1+a_x$ 

22	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
8.4	62'584	62'500	62'416	62'332	62'247	62'162	62'077	61'991	61'905	61'818
'3	63'029	62'946	62'864	62'780	62'697	62'613	62'528	62'443	62'358	62'273
'2	63'474	63'393	63'311	63'229	63'146	63'063	62'980	62'896	62'812	62'727
'1	63'920	63'839	63'758	63'677	63'596	63'514	63'431	63'348	63'265	63'182
'0	64'365	64'286	64'206	64'126	64'045	63'964	63'883	63'801	63'719	63'636
7.9	64'811	64'732	64'653	64'574	64'494	64'414	64'334	64'253	64'172	64'091
'8	65'256	65'179	65'101	65'022	64'944	64'865	64'786	64'706	64'626	64'545
'7	65'702	65'625	65'548	65'471	65'393	65'315	65'237	65'158	65'079	65'000
'6	66'147	66'071	65'996	65'919	65'843	65'766	65'688	65'611	65'533	65'455
'5	66'592	66'518	66'443	66'368	66'292	66'216	66'140	66'063	65'986	65'909
'4	67'038	66'964	66'890	66'816	66'742	66'667	66'591	66'516	66'440	66'364
'3	67'483	67'411	67'338	67'265	67'191	67'117	67'043	66'968	66'893	66'818
'2	67'929	67'857	67'785	67'713	67'640	67'568	67'494	67'421	67'347	67'273
'1	68'374	68'304	68'233	68'161	68'090	68'018	67'946	67'873	67'800	67'727
'0	68'820	68'750	68'680	68'610	68'539	68'468	68'397	68'326	68'254	68'182
6.9	69'265	69'196	69'128	69'058	68'989	68'919	68'849	68'778	68'707	68'636
'8	69'710	69'643	69'575	69'507	69'438	69'369	69'300	69'231	69'161	69'091
'7	70'156	70'089	70'022	69'955	69'888	69'820	69'752	69'683	69'615	69'545
'6	70'601	70'536	70'470	70'404	70'337	70'270	70'203	70'136	70'068	70'000
'5	71'047	70'982	70'917	70'852	70'787	70'721	70'655	70'588	70'522	70'455
'4	71'492	71'429	71'365	71'300	71'236	71'171	71'106	71'041	70'975	70'909
'3	71'938	71'875	71'812	71'749	71'685	71'622	71'558	71'493	71'429	71'364
'2	72'383	72'321	72'260	72'197	72'135	72'072	72'009	71'946	71'882	71'818
'1	72'829	72'768	72'707	72'646	72'584	72'523	72'461	72'398	72'336	72'273
'0	73'274	73'214	73'154	73'094	73'034	72'973	72'912	72'851	72'789	72'727
5.9	73'719	73'661	73'602	73'543	73'483	73'423	73'363	73'303	73'243	73'182
'8	74'165	74'107	74'049	73'991	73'933	73'874	73'815	73'756	73'696	73'636
'7	74'610	74'554	74'497	74'439	74'382	74'324	74'266	74'208	74'150	74'091
'6	75'056	75'000	74'944	74'888	74'831	74'775	74'718	74'661	74'603	74'545
'5	75'501	75'446	75'392	75'336	75'281	75'225	75'169	75'113	75'057	75'000
'4	75'947	75'893	75'839	75'785	75'730	75'676	75'621	75'566	75'510	75'455
'3	76'392	76'339	76'286	76'233	76'180	76'126	76'072	76'018	75'964	75'909
'2	76'837	76'786	76'734	76'682	76'629	76'577	76'524	76'471	76'417	76'364
'1	77'283	77'232	77'181	77'130	77'079	77'027	76'975	76'923	76'871	76'818
'0	77'728	77'679	77'629	77'578	77'528	77'477	77'427	77'376	77'324	77'273
4.9	78'174	78'125	78'076	78'027	77'978	77'928	77'878	77'828	77'778	77'727
'8	78'619	78'571	78'523	78'475	78'427	78'378	78'330	78'281	78'231	78'182
'7	79'065	79'018	78'971	78'924	78'876	78'829	78'781	78'733	78'685	78'636
'6	79'510	79'464	79'418	79'372	79'326	79'279	79'233	79'186	79'138	79'091
'5	79'955	79'911	79'866	79'821	79'775	79'730	79'684	79'638	79'592	79'545
'01	·045	·045	·045	·045	·045	·045	·045	·045	·045	·045
'02	·089	·089	·089	·090	·090	·090	·090	·090	·091	·091
'03	·134	·134	·134	·135	·135	·135	·135	·136	·136	·136
'04	·178	·179	·179	·179	·180	·180	·181	·181	·181	·182
'05	·223	·223	·224	·224	·225	·225	·226	·226	·227	·227
'06	·267	·268	·268	·269	·270	·270	·271	·271	·272	·273
'07	·312	·313	·313	·314	·315	·315	·316	·317	·317	·318
'08	·356	·357	·358	·359	·360	·360	·361	·362	·363	·364
'09	·401	·402	·403	·404	·404	·405	·406	·407	·408	·409

$1 + a_x$ 

22	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
4.4	80'401	80'357	80'313	80'269	80'225	80'180	80'135	80'090	80'045	80'000
'3	80'846	80'804	80'761	80'717	80'674	80'631	80'587	80'543	80'499	80'455
'2	81'292	81'250	81'208	81'166	81'124	81'081	81'038	80'995	80'952	80'909
'1	81'737	81'696	81'655	81'614	81'573	81'532	81'490	81'448	81'406	81'364
'0	82'183	82'143	82'103	82'063	82'022	81'982	81'941	81'900	81'859	81'818
3'9	82'628	82'589	82'550	82'511	82'472	82'432	82'393	82'353	82'313	82'273
'8	83'074	83'036	82'998	82'960	82'921	82'883	82'844	82'805	82'766	82'727
'7	83'519	83'482	83'445	83'408	83'371	83'333	83'296	83'258	83'220	83'182
'6	83'964	83'929	83'893	83'857	83'820	83'784	83'747	83'710	83'673	83'636
'5	84'410	84'375	84'340	84'305	84'270	84'234	84'199	84'163	84'127	84'091
'4	84'855	84'821	84'787	84'753	84'719	84'685	84'650	84'615	84'580	84'545
'3	85'301	85'268	85'235	85'202	85'169	85'135	85'102	85'068	85'034	85'000
'2	85'746	85'714	85'682	85'650	85'618	85'586	85'553	85'520	85'488	85'455
'1	86'192	86'161	86'130	86'099	86'067	86'036	86'005	85'973	85'941	85'909
'0	86'637	86'607	86'577	86'547	86'517	86'486	86'456	86'425	86'395	86'364
2'9	87'082	87'054	87'025	86'996	86'966	86'937	86'907	86'878	86'848	86'818
'8	87'528	87'500	87'472	87'444	87'416	87'387	87'359	87'330	87'302	87'273
'7	87'973	87'946	87'919	87'892	87'865	87'838	87'810	87'783	87'755	87'727
'6	88'419	88'393	88'367	88'341	88'315	88'288	88'262	88'235	88'209	88'182
'5	88'864	88'839	88'814	88'789	88'764	88'739	88'713	88'688	88'662	88'636
'4	89'310	89'286	89'262	89'238	89'213	89'189	89'165	89'140	89'116	89'091
'3	89'755	89'732	89'709	89'686	89'663	89'640	89'616	89'593	89'569	89'545
'2	90'200	90'179	90'157	90'135	90'112	90'090	90'068	90'045	90'023	90'000
'1	90'646	90'625	90'604	90'583	90'562	90'541	90'519	90'498	90'476	90'455
'0	91'091	91'071	91'051	91'031	91'011	90'991	90'971	90'950	90'930	90'909
1'9	91'537	91'518	91'499	91'480	91'461	91'441	91'422	91'403	91'383	91'364
'8	91'982	91'964	91'946	91'928	91'910	91'892	91'874	91'855	91'837	91'818
'7	92'428	92'411	92'394	92'377	92'360	92'342	92'325	92'308	92'290	92'273
'6	92'873	92'857	92'841	92'825	92'809	92'793	92'777	92'760	92'744	92'727
'5	93'318	93'304	93'289	93'274	93'258	93'243	93'228	93'213	93'197	93'182
'4	93'764	93'750	93'736	93'722	93'708	93'694	93'679	93'665	93'651	93'636
'3	94'209	94'196	94'183	94'170	94'157	94'144	94'131	94'118	94'104	94'091
'2	94'655	94'643	94'631	94'619	94'607	94'595	94'582	94'570	94'558	94'545
'1	95'100	95'089	95'078	95'067	95'056	95'045	95'034	95'023	95'011	95'000
'0	95'546	95'536	95'526	95'516	95'506	95'496	95'485	95'475	95'465	95'455
'01	'045	'045	'045	'045	'045	'045	'045	'045	'045	'045
'02	'089	'089	'089	'090	'090	'090	'090	'090	'091	'091
'03	'134	'134	'134	'135	'135	'135	'135	'136	'136	'136
'04	'178	'179	'179	'179	'180	'180	'181	'181	'181	'182
'05	'223	'223	'224	'224	'225	'225	'226	'226	'227	'227
'06	'267	'268	'268	'269	'270	'270	'271	'271	'272	'273
'07	'312	'313	'313	'314	'315	'315	'316	'317	'317	'318
'08	'356	'357	'358	'359	'360	'360	'361	'362	'363	'364
'09	'401	'402	'403	'404	'404	'405	'406	'407	'408	'409



$1 + a_x$ 

21	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
21'9	.228	.000	.000	.000	.000	.000	.000	.000	.000	.000
'8	.683	.457	.229	.000	.000	.000	.000	.000	.000	.000
'7	1.139	.913	.686	.459	.230	.000	.000	.000	.000	.000
'6	1.595	1.370	1.144	.917	.690	.461	.231	.000	.000	.000
'5	2.050	1.826	1.602	1.376	1.149	.922	.693	.463	.232	.000
'4	2.506	2.283	2.059	1.835	1.609	1.382	1.155	.926	.696	.465
'3	2.961	2.740	2.517	2.294	2.069	1.843	1.617	1.389	1.160	.930
'2	3.417	3.196	2.975	2.752	2.529	2.304	2.079	1.852	1.624	1.395
'1	3.872	3.653	3.432	3.211	2.989	2.765	2.540	2.315	2.088	1.860
'0	4.328	4.110	3.890	3.670	3.448	3.226	3.002	2.778	2.552	2.326
20'9	4.784	4.566	4.348	4.128	3.908	3.687	3.464	3.241	3.016	2.791
'8	5.239	5.023	4.805	4.587	4.368	4.147	3.926	3.704	3.480	3.256
'7	5.695	5.479	5.263	5.046	4.828	4.608	4.388	4.167	3.944	3.721
'6	6.150	5.936	5.721	5.505	5.287	5.069	4.850	4.630	4.408	4.186
'5	6.606	6.393	6.178	5.963	5.747	5.530	5.312	5.093	4.872	4.651
'4	7.062	6.849	6.636	6.422	6.207	5.991	5.774	5.556	5.336	5.116
'3	7.517	7.306	7.094	6.881	6.667	6.452	6.236	6.019	5.800	5.581
'2	7.973	7.763	7.551	7.339	7.126	6.912	6.697	6.481	6.265	6.047
'1	8.428	8.219	8.009	7.798	7.586	7.373	7.159	6.944	6.729	6.512
'0	8.884	8.676	8.467	8.257	8.046	7.834	7.621	7.407	7.193	6.977
19'9	9.339	9.132	8.924	8.716	8.506	8.295	8.083	7.870	7.657	7.442
'8	9.795	9.589	9.382	9.174	8.966	8.756	8.545	8.333	8.121	7.907
'7	10.251	10.046	9.840	9.633	9.425	9.217	9.007	8.796	8.585	8.372
'6	10.706	10.502	10.297	10.092	9.885	9.677	9.469	9.259	9.049	8.837
'5	11.162	10.959	10.755	10.550	10.345	10.138	9.931	9.722	9.513	9.302
'4	11.617	11.416	11.213	11.009	10.805	10.599	10.393	10.185	9.977	9.767
'3	12.073	11.872	11.670	11.468	11.264	11.060	10.855	10.648	10.441	10.233
'2	12.528	12.329	12.128	11.927	11.724	11.521	11.316	11.111	10.905	10.698
'1	12.984	12.785	12.586	12.385	12.184	11.982	11.778	11.574	11.369	11.163
'0	13.440	13.242	13.043	12.844	12.644	12.442	12.240	12.037	11.833	11.628
18'9	13.895	13.699	13.501	13.303	13.103	12.903	12.702	12.500	12.297	12.093
'8	14.351	14.155	13.959	13.761	13.563	13.364	13.164	12.963	12.761	12.558
'7	14.806	14.612	14.416	14.220	14.023	13.825	13.626	13.426	13.225	13.023
'6	15.262	15.068	14.874	14.679	14.483	14.286	14.088	13.889	13.689	13.488
'5	15.718	15.525	15.332	15.138	14.943	14.747	14.550	14.352	14.153	13.953
'01	.016	.016	.016	.016	.016	.016	.016	.016	.016	.017
'02	.091	.091	.092	.092	.092	.092	.092	.093	.093	.093
'03	.137	.137	.137	.138	.138	.138	.139	.139	.139	.140
'04	.182	.183	.183	.183	.184	.184	.185	.185	.186	.186
'05	.228	.228	.229	.229	.230	.230	.231	.231	.232	.233
'06	.273	.274	.275	.275	.276	.276	.277	.278	.278	.279
'07	.319	.320	.320	.321	.322	.323	.323	.324	.325	.326
'08	.364	.365	.366	.367	.368	.369	.370	.370	.371	.372
'09	.410	.411	.412	.413	.414	.415	.416	.417	.418	.419



$$1 + a_x$$

21	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
18.4	16.173	15.982	15.789	15.596	15.402	15.207	15.012	14.815	14.617	14.419
'3	16.629	16.438	16.247	16.055	15.862	15.668	15.473	15.278	15.081	14.884
'2	17.084	16.895	16.705	16.514	16.322	16.129	15.935	15.741	15.545	15.349
'1	17.540	17.352	17.162	16.972	16.782	16.590	16.397	16.204	16.009	15.814
'0	17.995	17.808	17.620	17.431	17.241	17.051	16.859	16.667	16.473	16.279
17.9	18.451	18.265	18.078	17.890	17.701	17.512	17.321	17.130	16.937	16.744
'8	18.907	18.721	18.535	18.349	18.161	17.972	17.783	17.593	17.401	17.209
'7	19.362	19.178	18.993	18.807	18.621	18.433	18.245	18.056	17.865	17.674
'6	19.818	19.635	19.451	19.266	19.080	18.894	18.707	18.519	18.329	18.140
'5	20.273	20.091	19.908	19.725	19.540	19.355	19.169	18.981	18.794	18.605
'4	20.729	20.548	20.366	20.183	20.000	19.816	19.630	19.444	19.258	19.070
'3	21.185	21.005	20.824	20.642	20.460	20.276	20.092	19.907	19.722	19.535
'2	21.640	21.461	21.281	21.101	20.920	20.737	20.554	20.370	20.186	20.000
'1	22.096	21.918	21.739	21.560	21.379	21.198	21.016	20.833	20.650	20.465
'0	22.551	22.374	22.197	22.018	21.839	21.659	21.478	21.296	21.114	20.930
16.9	23.007	22.831	22.654	22.477	22.299	22.120	21.940	21.759	21.578	21.395
'8	23.462	23.288	23.112	22.936	22.759	22.581	22.402	22.222	22.042	21.860
'7	23.918	23.744	23.570	23.394	23.218	23.041	22.864	22.685	22.506	22.326
'6	24.374	24.201	24.027	23.853	23.678	23.502	23.326	23.148	22.970	22.791
'5	24.829	24.658	24.485	24.312	24.138	23.963	23.788	23.611	23.434	23.256
'4	25.285	25.114	24.943	24.771	24.598	24.424	24.249	24.074	23.898	23.721
'3	25.740	25.571	25.400	25.229	25.057	24.885	24.711	24.537	24.362	24.186
'2	26.196	26.027	25.858	25.688	25.517	25.346	25.173	25.000	24.826	24.651
'1	26.651	26.484	26.316	26.147	25.977	25.806	25.635	25.463	25.290	25.116
'0	27.107	26.941	26.773	26.606	26.437	26.267	26.097	25.926	25.754	25.581
15.9	27.563	27.397	27.231	27.064	26.897	26.728	26.559	26.389	26.218	26.047
'8	28.018	27.854	27.689	27.523	27.356	27.189	27.021	26.852	26.682	26.512
'7	28.474	28.311	28.146	27.982	27.816	27.650	27.483	27.315	27.146	26.977
'6	28.929	28.767	28.604	28.440	28.276	28.111	27.945	27.778	27.610	27.442
'5	29.385	29.224	29.062	28.899	28.736	28.571	28.406	28.241	28.074	27.907
'4	29.841	29.680	29.519	29.358	29.195	29.032	28.868	28.704	28.538	28.372
'3	30.296	30.137	29.977	29.817	29.655	29.493	29.330	29.167	29.002	28.837
'2	30.752	30.594	30.435	30.275	30.115	29.954	29.792	29.630	29.466	29.302
'1	31.207	31.050	30.892	30.734	30.575	30.415	30.254	30.093	29.930	29.767
'0	31.663	31.507	31.350	31.193	31.034	30.876	30.716	30.556	30.394	30.233
14.9	32.118	31.963	31.808	31.651	31.494	31.336	31.178	31.019	30.858	30.698
'8	32.574	32.420	32.265	32.110	31.954	31.797	31.640	31.481	31.323	31.163
'7	33.030	32.877	32.723	32.569	32.414	32.258	32.102	31.944	31.787	31.628
'6	33.485	33.333	33.181	33.028	32.874	32.719	32.564	32.407	32.251	32.093
'5	33.941	33.790	33.638	33.486	33.333	33.180	33.025	32.870	32.715	32.558
'4	34.396	34.247	34.096	33.945	33.793	33.641	33.487	33.333	33.179	33.023
'3	34.852	34.703	34.554	34.404	34.253	34.101	33.949	33.796	33.643	33.488
'2	35.308	35.160	35.011	34.862	34.713	34.562	34.411	34.259	34.107	33.953
'1	35.763	35.616	35.469	35.321	35.172	35.023	34.873	34.722	34.571	34.419
'0	36.219	36.073	35.927	35.780	35.632	35.484	35.335	35.185	35.035	34.884
13.9	36.674	36.530	36.384	36.239	36.092	35.945	35.797	35.648	35.499	35.349
'8	37.130	36.986	36.842	36.697	36.552	36.406	36.259	36.111	35.963	35.814
'7	37.585	37.443	37.300	37.156	37.011	36.866	36.721	36.574	36.427	36.279
'6	38.041	37.900	37.757	37.615	37.471	37.327	37.182	37.037	36.891	36.744
'5	38.497	38.356	38.215	38.073	37.931	37.788	37.644	37.500	37.355	37.209

$1 + a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
13·4	38'952	38'813	38'673	38'532	38'391	38'249	38'106	37'963	37'819	37'674
·3	39'408	39'269	39'130	38'991	38'851	38'710	38'568	38'426	38'283	38'140
·2	39'863	39'726	39'588	39'450	39'310	39'171	39'030	38'889	38'747	38'605
·1	40'319	40'183	40'046	39'908	39'770	39'631	39'492	39'352	39'211	39'070
·0	40'774	40'639	40'503	40'367	40'230	40'092	39'954	39'815	39'675	39'535
12·9	41'230	41'096	40'961	40'826	40'690	40'553	40'416	40'278	40'139	40'000
·8	41'686	41'553	41'419	41'284	41'149	41'014	40'878	40'741	40'603	40'465
·7	42'141	42'009	41'876	41'743	41'609	41'475	41'339	41'204	41'067	40'930
·6	42'597	42'466	42'334	42'202	42'069	41'935	41'801	41'667	41'531	41'395
·5	43'052	42'922	42'792	42'661	42'529	42'396	42'263	42'130	41'995	41'860
·4	43'508	43'379	43'249	43'119	42'989	42'857	42'725	42'593	42'459	42'326
·3	43'964	43'836	43'707	43'578	43'448	43'318	43'187	43'056	42'923	42'791
·2	44'419	44'292	44'165	44'037	43'908	43'779	43'649	43'519	43'387	43'256
·1	44'875	44'749	44'622	44'495	44'368	44'240	44'111	43'981	43'852	43'721
·0	45'330	45'205	45'080	44'954	44'828	44'700	44'573	44'444	44'316	44'186
11·9	45'786	45'662	45'538	45'413	45'287	45'161	45'035	44'907	44'780	44'651
·8	46'241	46'119	45'995	45'872	45'747	45'622	45'497	45'370	45'244	45'116
·7	46'697	46'575	46'453	46'330	46'207	46'083	45'958	45'833	45'708	45'581
·6	47'153	47'032	46'911	46'789	46'667	46'544	46'420	46'296	46'172	46'047
·5	47'608	47'489	47'368	47'248	47'126	47'005	46'882	46'759	46'636	46'512
·4	48'064	47'945	47'826	47'706	47'586	47'465	47'344	47'222	47'100	46'977
·3	48'519	48'402	48'284	48'165	48'046	47'926	47'806	47'685	47'564	47'442
·2	48'975	48'858	48'741	48'624	48'506	48'387	48'268	48'148	48'028	47'907
·1	49'431	49'315	49'199	49'083	48'966	48'848	48'730	48'611	48'492	48'372
·0	49'886	49'772	49'657	49'541	49'425	49'309	49'192	49'074	48'956	48'837
10·9	50'342	50'228	50'114	50'000	49'885	49'770	49'654	49'537	49'420	49'302
·8	50'797	50'685	50'572	50'459	50'345	50'230	50'115	50'000	49'884	49'767
·7	51'253	51'142	51'030	50'917	50'805	50'691	50'577	50'463	50'348	50'233
·6	51'708	51'598	51'487	51'376	51'264	51'152	51'039	50'926	50'812	50'698
·5	52'164	52'055	51'945	51'835	51'724	51'613	51'501	51'389	51'276	51'163
·4	52'620	52'511	52'403	52'294	52'184	52'074	51'963	51'852	51'740	51'628
·3	53'075	52'968	52'860	52'752	52'644	52'535	52'425	52'315	52'204	52'093
·2	53'531	53'425	53'318	53'211	53'103	52'995	52'887	52'778	52'668	52'558
·1	53'986	53'881	53'776	53'670	53'563	53'456	53'349	53'241	53'132	53'023
·0	54'442	54'338	54'233	54'128	54'023	53'917	53'811	53'704	53'596	53'488
9·9	54'897	54'795	54'691	54'587	54'483	54'378	54'273	54'167	54'060	53'953
·8	55'353	55'251	55'149	55'046	54'943	54'839	54'734	54'630	54'524	54'419
·7	55'809	55'708	55'606	55'505	55'402	55'300	55'196	55'093	54'988	54'884
·6	56'264	56'164	56'064	55'963	55'862	55'760	55'658	55'556	55'452	55'349
·5	56'720	56'621	56'522	56'422	56'322	56'221	56'120	56'019	55'916	55'814
·01	·046	·046	·046	·046	·046	·046	·046	·046	·046	·047
·02	·091	·091	·092	·092	·092	·092	·092	·093	·093	·093
·03	·137	·137	·137	·138	·138	·138	·139	·139	·139	·140
·04	·182	·183	·183	·183	·184	·184	·185	·185	·186	·186
·05	·228	·228	·229	·229	·230	·230	·231	·231	·232	·233
·06	·273	·274	·275	·275	·276	·276	·277	·278	·278	·279
·07	·319	·320	·320	·321	·322	·323	·323	·324	·325	·326
·08	·364	·365	·366	·367	·368	·369	·370	·370	·371	·372
·09	·410	·411	·412	·413	·414	·415	·416	·417	·418	·419

$1 + a_x$ 

21	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
9'4	57'175	57'078	56'979	56'881	56'782	56'682	56'582	56'481	56'381	56'279
'3	57'631	57'534	57'437	57'339	57'241	57'143	57'044	56'944	56'845	56'744
'2	58'087	57'991	57'895	57'798	57'701	57'604	57'506	57'407	57'309	57'209
'1	58'542	58'447	58'352	58'257	58'161	58'065	57'968	57'870	57'773	57'674
'0	58'998	58'904	58'810	58'716	58'621	58'525	58'430	58'333	58'237	58'140
8'9	59'453	59'361	59'268	59'174	59'080	58'986	58'891	58'796	58'701	58'605
'8	59'909	59'817	59'725	59'633	59'540	59'447	59'353	59'259	59'165	59'070
'7	60'364	60'274	60'183	60'092	60'000	59'908	59'815	59'722	59'629	59'535
'6	60'820	60'731	60'641	60'550	60'460	60'369	60'277	60'185	60'093	60'000
'5	61'276	61'187	61'098	61'009	60'920	60'829	60'739	60'648	60'557	60'465
'4	61'731	61'644	61'556	61'468	61'379	61'290	61'201	61'111	61'021	60'930
'3	62'187	62'100	62'014	61'927	61'839	61'751	61'663	61'574	61'485	61'395
'2	62'642	62'557	62'471	62'385	62'299	62'212	62'125	62'037	61'949	61'860
'1	63'098	63'014	62'929	62'844	62'759	62'673	62'587	62'500	62'413	62'326
'0	63'554	63'470	63'387	63'303	63'218	63'134	63'049	62'963	62'877	62'791
7'9	64'009	63'927	63'844	63'761	63'678	63'594	63'510	63'426	63'341	63'256
'8	64'465	64'384	64'302	64'220	64'138	64'055	63'972	63'889	63'805	63'721
'7	64'920	64'840	64'760	64'679	64'598	64'516	64'434	64'352	64'269	64'186
'6	65'376	65'297	65'217	65'138	65'057	64'977	64'896	64'815	64'733	64'651
'5	65'831	65'753	65'675	65'596	65'517	65'438	65'358	65'278	65'197	65'116
'4	66'287	66'210	66'133	66'055	65'977	65'899	65'820	65'741	65'661	65'581
'3	66'743	66'667	66'590	66'514	66'437	66'359	66'282	66'204	66'125	66'047
'2	67'198	67'123	67'048	66'972	66'897	66'820	66'744	66'667	66'589	66'512
'1	67'654	67'580	67'506	67'431	67'356	67'281	67'206	67'130	67'053	66'977
'0	68'109	68'037	67'963	67'890	67'816	67'742	67'667	67'593	67'517	67'442
6'9	68'565	68'493	68'421	68'349	68'276	68'203	68'129	68'056	67'981	67'907
'8	69'021	68'950	68'879	68'807	68'736	68'664	68'591	68'519	68'445	68'372
'7	69'476	69'406	69'336	69'266	69'195	69'124	69'053	68'981	68'910	68'837
'6	69'932	69'863	69'794	69'725	69'655	69'585	69'515	69'444	69'374	69'302
'5	70'387	70'320	70'252	70'183	70'115	70'046	69'977	69'907	69'838	69'767
'4	70'843	70'776	70'709	70'642	70'575	70'507	70'439	70'370	70'302	70'233
'3	71'298	71'233	71'167	71'101	71'034	70'968	70'901	70'833	70'766	70'698
'2	71'754	71'689	71'625	71'560	71'494	71'429	71'363	71'296	71'230	71'163
'1	72'210	72'146	72'082	72'018	71'954	71'889	71'824	71'759	71'694	71'628
'0	72'665	72'603	72'540	72'477	72'414	72'350	72'286	72'222	72'158	72'093
5'9	73'121	73'059	72'998	72'936	72'874	72'811	72'748	72'685	72'622	72'558
'8	73'576	73'516	73'455	73'394	73'333	73'272	73'210	73'148	73'086	73'023
'7	74'032	73'973	73'913	73'853	73'793	73'733	73'672	73'611	73'550	73'488
'6	74'487	74'429	74'371	74'312	74'253	74'194	74'134	74'074	74'014	73'953
'5	74'943	74'886	74'828	74'771	74'713	74'654	74'596	74'537	74'478	74'419
'4	75'399	75'342	75'286	75'229	75'172	75'115	75'058	75'000	74'942	74'884
'3	75'854	75'799	75'744	75'688	75'632	75'576	75'520	75'463	75'406	75'349
'2	76'310	76'256	76'201	76'147	76'092	76'037	75'982	75'926	75'870	75'814
'1	76'765	76'712	76'659	76'606	76'552	76'498	76'443	76'389	76'334	76'279
'0	77'221	77'169	77'117	77'064	77'011	76'959	76'905	76'852	76'798	76'744
4'9	77'677	77'626	77'574	77'523	77'471	77'419	77'367	77'315	77'262	77'209
'8	78'132	78'082	78'032	77'982	77'931	77'880	77'829	77'778	77'726	77'674
'7	78'588	78'539	78'490	78'440	78'391	78'341	78'291	78'241	78'190	78'140
'6	79'043	78'995	78'947	78'899	78'851	78'802	78'753	78'704	78'654	78'605
'5	79'499	79'452	79'405	79'358	79'310	79'263	79'215	79'167	79'118	79'070



$1 + a_x$ 

21	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
4.4	79'954	79'909	79'863	79'817	79'770	79'724	79'677	79'630	79'582	79'535
3	80'410	80'365	80'320	80'275	80'230	80'184	80'139	80'093	80'046	80'000
2	80'866	80'822	80'778	80'734	80'690	80'645	80'600	80'556	80'510	80'465
1	81'321	81'279	81'236	81'193	81'149	81'106	81'062	81'019	80'974	80'930
0	81'777	81'735	81'693	81'651	81'609	81'567	81'524	81'481	81'439	81'395
3.9	82'232	82'192	82'151	82'110	82'069	82'028	81'986	81'944	81'903	81'860
8	82'688	82'648	82'609	82'569	82'529	82'488	82'448	82'407	82'367	82'326
7	83'144	83'105	83'066	83'028	82'989	82'949	82'910	82'870	82'831	82'791
6	83'599	83'562	83'524	83'486	83'448	83'410	83'372	83'333	83'295	83'256
5	84'055	84'018	83'982	83'945	83'908	83'871	83'834	83'796	83'759	83'721
4	84'510	84'475	84'439	84'404	84'368	84'332	84'296	84'259	84'223	84'186
3	84'966	84'932	84'897	84'862	84'828	84'793	84'758	84'722	84'687	84'651
2	85'421	85'388	85'355	85'321	85'287	85'253	85'219	85'185	85'151	85'116
1	85'877	85'845	85'812	85'780	85'747	85'714	85'681	85'648	85'615	85'581
0	86'333	86'301	86'270	86'239	86'207	86'175	86'143	86'111	86'079	86'047
2.9	86'788	86'758	86'728	86'697	86'667	86'636	86'605	86'574	86'543	86'512
8	87'244	87'215	87'185	87'156	87'126	87'097	87'067	87'037	87'007	86'977
7	87'699	87'671	87'643	87'615	87'586	87'558	87'529	87'500	87'471	87'442
6	88'155	88'128	88'101	88'073	88'046	88'018	87'991	87'963	87'935	87'907
5	88'610	88'584	88'558	88'532	88'506	88'479	88'453	88'426	88'399	88'372
4	89'066	89'041	89'016	88'991	88'966	88'940	88'915	88'889	88'863	88'837
3	89'522	89'498	89'474	89'450	89'425	89'401	89'376	89'352	89'327	89'302
2	89'977	89'954	89'931	89'908	89'885	89'862	89'838	89'815	89'791	89'767
1	90'433	90'411	90'389	90'367	90'345	90'323	90'300	90'278	90'255	90'233
0	90'888	90'868	90'847	90'826	90'805	90'783	90'762	90'741	90'719	90'698
1.9	91'344	91'324	91'304	91'284	91'264	91'244	91'224	91'204	91'183	91'163
8	91'800	91'781	91'762	91'743	91'724	91'705	91'686	91'667	91'647	91'628
7	92'255	92'237	92'220	92'202	92'184	92'166	92'148	92'130	92'111	92'093
6	92'711	92'694	92'677	92'661	92'644	92'627	92'610	92'593	92'575	92'558
5	93'166	93'151	93'135	93'119	93'103	93'088	93'072	93'056	93'039	93'023
4	93'622	93'607	93'593	93'578	93'563	93'548	93'533	93'519	93'503	93'488
3	94'077	94'064	94'050	94'037	94'023	94'009	93'995	93'981	93'968	93'953
2	94'533	94'521	94'508	94'495	94'483	94'470	94'457	94'444	94'432	94'419
1	94'989	94'977	94'966	94'954	94'943	94'931	94'919	94'907	94'896	94'884
0	95'444	95'434	95'423	95'413	95'402	95'392	95'381	95'370	95'360	95'349
0.1	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17
0.2	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
0.3	1.37	1.37	1.37	1.38	1.38	1.38	1.39	1.39	1.39	1.40
0.4	1.82	1.83	1.83	1.83	1.84	1.84	1.85	1.85	1.86	1.86
0.5	2.28	2.28	2.29	2.29	2.30	2.30	2.31	2.31	2.32	2.33
0.6	2.73	2.74	2.75	2.75	2.76	2.76	2.77	2.78	2.78	2.79
0.7	3.19	3.20	3.20	3.21	3.22	3.23	3.23	3.24	3.25	3.26
0.8	3.64	3.65	3.66	3.67	3.68	3.69	3.70	3.70	3.71	3.72
0.9	4.10	4.11	4.12	4.13	4.14	4.15	4.16	4.17	4.18	4.19



$1+a_x$ 

21	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
1+ $a_{x-1}$										
21'4	'233	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	'699	'467	'234	'000	'000	'000	'000	'000	'000	'000
'2	1'166	'935	'703	'469	'235	'000	'000	'000	'000	'000
'1	1'632	1'402	1'171	'939	'706	'472	'236	'000	'000	'000
'0	2'098	1'869	1'639	1'408	1'176	'943	'709	'474	'238	'000
20'9	2'564	2'336	2'108	1'878	1'647	1'415	1'182	'948	'713	'476
'8	3'030	2'804	2'576	2'347	2'118	1'887	1'655	1'422	1'188	'952
'7	3'497	3'271	3'044	2'817	2'588	2'358	2'128	1'896	1'663	1'429
'6	3'963	3'738	3'513	3'286	3'059	2'830	2'600	2'370	2'138	1'905
'5	4'429	4'206	3'981	3'756	3'529	3'302	3'073	2'844	2'613	2'381
'4	4'895	4'673	4'450	4'225	4'000	3'774	3'546	3'318	3'088	2'857
'3	5'361	5'140	4'918	4'695	4'471	4'245	4'019	3'791	3'563	3'333
'2	5'828	5'607	5'386	5'164	4'941	4'717	4'492	4'265	4'038	3'810
'1	6'294	6'075	5'855	5'634	5'412	5'189	4'965	4'739	4'513	4'286
'0	6'760	6'542	6'323	6'103	5'882	5'660	5'437	5'213	4'988	4'762
19'9	7'226	7'009	6'792	6'573	6'353	6'132	5'910	5'687	5'463	5'238
'8	7'692	7'477	7'260	7'042	6'824	6'604	6'383	6'161	5'938	5'714
'7	8'159	7'944	7'728	7'512	7'294	7'075	6'856	6'635	6'413	6'190
'6	8'625	8'411	8'197	7'981	7'765	7'547	7'329	7'109	6'888	6'667
'5	9'091	8'879	8'665	8'451	8'235	8'019	7'801	7'583	7'363	7'143
'4	9'557	9'346	9'133	8'920	8'706	8'491	8'274	8'057	7'838	7'619
'3	10'023	9'813	9'602	9'390	9'176	8'962	8'747	8'531	8'314	8'095
'2	10'490	10'280	10'070	9'859	9'647	9'434	9'220	9'005	8'789	8'571
'1	10'956	10'748	10'539	10'329	10'118	9'906	9'693	9'479	9'264	9'048
'0	11'422	11'215	11'007	10'798	10'588	10'377	10'165	9'953	9'739	9'524
18'9	11'888	11'682	11'475	11'268	11'059	10'849	10'638	10'427	10'214	10'000
'8	12'354	12'150	11'944	11'737	11'529	11'321	11'111	10'900	10'689	10'476
'7	12'821	12'617	12'412	12'207	12'000	11'792	11'584	11'374	11'164	10'952
'6	13'287	13'084	12'881	12'676	12'471	12'264	12'057	11'848	11'639	11'429
'5	13'753	13'551	13'349	13'146	12'941	12'736	12'530	12'322	12'114	11'905
'4	14'219	14'019	13'817	13'615	13'412	13'208	13'002	12'796	12'589	12'381
'3	14'685	14'486	14'286	14'085	13'882	13'679	13'475	13'270	13'064	12'857
'2	15'152	14'953	14'754	14'554	14'353	14'151	13'948	13'744	13'539	13'333
'1	15'618	15'421	15'222	15'023	14'824	14'623	14'421	14'218	14'014	13'810
'0	16'084	15'888	15'691	15'493	15'294	15'094	14'894	14'692	14'489	14'286
17'9	16'550	16'355	16'159	15'962	15'765	15'566	15'366	15'166	14'964	14'762
'8	17'016	16'822	16'628	16'432	16'235	16'038	15'839	15'640	15'439	15'238
'7	17'483	17'290	17'096	16'901	16'706	16'509	16'312	16'114	15'914	15'714
'6	17'949	17'757	17'564	17'371	17'176	16'981	16'785	16'588	16'390	16'190
'5	18'415	18'224	18'033	17'840	17'647	17'453	17'258	17'062	16'865	16'667
'4	18'881	18'692	18'501	18'310	18'118	17'925	17'730	17'536	17'340	17'143
'3	19'347	19'159	18'970	18'779	18'588	18'396	18'203	18'009	17'815	17'619
'2	19'814	19'626	19'438	19'249	19'059	18'868	18'676	18'483	18'290	18'095
'1	20'280	20'093	19'906	19'718	19'529	19'340	19'149	18'957	18'765	18'571
'0	20'746	20'561	20'375	20'188	20'000	19'811	19'622	19'431	19'240	19'048
16'9	21'212	21'028	20'843	20'657	20'471	20'283	20'095	19'905	19'715	19'524
'8	21'678	21'495	21'311	21'127	20'941	20'755	20'567	20'379	20'190	20'000
'7	22'145	21'963	21'780	21'596	21'412	21'226	21'040	20'853	20'665	20'476
'6	22'611	22'430	22'248	22'066	21'882	21'698	21'513	21'327	21'140	20'952
'5	23'077	22'897	22'717	22'535	22'353	22'170	21'986	21'801	21'615	21'429

$1 + a_x$ 

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
16'4	23'543	23'364	23'185	23'005	22'824	22'642	22'459	22'275	22'090	21'905
'3	24'009	23'832	23'653	23'474	23'294	23'113	22'931	22'749	22'565	22'381
'2	24'476	24'299	24'122	23'944	23'765	23'585	23'404	23'223	23'040	22'857
'1	24'942	24'766	24'590	24'413	24'235	24'057	23'877	23'697	23'515	23'333
'0	25'408	25'234	25'059	24'883	24'706	24'528	24'350	24'171	23'990	23'810
15'9	25'874	25'701	25'527	25'352	25'176	25'000	24'823	24'645	24'466	24'286
'8	26'340	26'168	25'995	25'822	25'647	25'472	25'296	25'118	24'941	24'762
'7	26'807	26'636	26'464	26'291	26'118	25'943	25'768	25'592	25'416	25'238
'6	27'273	27'103	26'932	26'761	26'588	26'415	26'241	26'066	25'891	25'714
'5	27'739	27'570	27'400	27'230	27'059	26'887	26'714	26'540	26'366	26'190
'4	28'205	28'037	27'869	27'700	27'529	27'358	27'187	27'014	26'841	26'667
'3	28'671	28'505	28'337	28'169	28'000	27'830	27'660	27'488	27'316	27'143
'2	29'138	28'972	28'806	28'638	28'471	28'302	28'132	27'962	27'791	27'619
'1	29'604	29'439	29'274	29'108	28'941	28'774	28'605	28'436	28'266	28'095
'0	30'070	29'907	29'742	29'577	29'412	29'245	29'078	28'910	28'741	28'571
14'9	30'536	30'374	30'211	30'047	29'882	29'717	29'551	29'384	29'216	29'048
'8	31'002	30'841	30'679	30'516	30'353	30'189	30'024	29'858	29'691	29'524
'7	31'469	31'308	31'148	30'986	30'824	30'660	30'496	30'332	30'166	30'000
'6	31'935	31'776	31'616	31'455	31'294	31'132	30'969	30'806	30'641	30'476
'5	32'401	32'243	32'084	31'925	31'765	31'604	31'442	31'280	31'116	30'952
'4	32'867	32'710	32'553	32'394	32'235	32'075	31'915	31'754	31'591	31'429
'3	33'333	33'178	33'021	32'864	32'706	32'547	32'388	32'227	32'067	31'905
'2	33'800	33'645	33'489	33'333	33'176	33'019	32'861	32'701	32'542	32'381
'1	34'266	34'112	33'958	33'803	33'647	33'491	33'333	33'175	33'017	32'857
'0	34'732	34'579	34'426	34'272	34'118	33'962	33'806	33'649	33'492	33'333
13'9	35'198	35'047	34'895	34'742	34'588	34'434	34'279	34'123	33'967	33'810
'8	35'664	35'514	35'363	35'211	35'059	34'906	34'752	34'597	34'442	34'286
'7	36'131	35'981	35'831	35'681	35'529	35'377	35'225	35'071	34'917	34'762
'6	36'597	36'449	36'300	36'150	36'000	35'849	35'697	35'545	35'392	35'238
'5	37'063	36'916	36'768	36'620	36'471	36'321	36'170	36'019	35'867	35'714
'4	37'529	37'383	37'237	37'089	36'941	36'792	36'643	36'493	36'342	36'190
'3	37'995	37'850	37'705	37'559	37'412	37'264	37'116	36'967	36'817	36'667
'2	38'462	38'318	38'173	38'028	37'882	37'736	37'589	37'441	37'292	37'143
'1	38'928	38'785	38'642	38'498	38'353	38'208	38'061	37'915	37'767	37'619
'0	39'394	39'252	39'110	38'967	38'824	38'679	38'534	38'389	38'242	38'095
12'9	39'860	39'720	39'578	39'437	39'294	39'151	39'007	38'863	38'717	38'571
'8	40'326	40'187	40'047	39'906	39'765	39'623	39'480	39'336	39'192	39'048
'7	40'793	40'654	40'515	40'376	40'235	40'094	39'953	39'810	39'667	39'524
'6	41'259	41'121	40'984	40'845	40'706	40'566	40'426	40'284	40'143	40'000
'5	41'725	41'589	41'452	41'315	41'176	41'038	40'898	40'758	40'618	40'476
'01	·047	·047	·047	·047	·047	·047	·047	·047	·048	·048
'02	·093	·093	·094	·094	·094	·094	·095	·095	·095	·095
'03	·140	·140	·141	·141	·141	·142	·142	·142	·143	·143
'04	·186	·187	·187	·188	·188	·189	·189	·190	·190	·190
'05	·233	·234	·234	·235	·235	·236	·236	·237	·238	·238
'06	·280	·280	·281	·282	·282	·283	·284	·284	·285	·286
'07	·326	·327	·328	·329	·329	·330	·331	·332	·333	·333
'08	·373	·374	·375	·376	·376	·377	·378	·379	·380	·381
'09	·420	·421	·422	·423	·424	·425	·426	·427	·428	·429

$1 + a_x$ 

21	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
12'4	42'191	42'056	41'920	41'784	41'647	41'509	41'371	41'232	41'093	40'952
'3	42'657	42'523	42'389	42'254	42'118	41'981	41'844	41'706	41'568	41'429
'2	43'124	42'991	42'857	42'723	42'588	42'453	42'317	42'180	42'043	41'905
'1	43'590	43'458	43'326	43'192	43'059	42'925	42'790	42'654	42'518	42'381
'0	44'056	43'925	43'794	43'662	43'529	43'396	43'262	43'128	42'993	42'857
11'9	44'522	44'393	44'262	44'131	44'000	43'868	43'735	43'602	43'468	43'333
'8	44'988	44'860	44'731	44'601	44'471	44'340	44'208	44'076	43'943	43'810
'7	45'455	45'327	45'199	45'070	44'941	44'811	44'681	44'550	44'418	44'286
'6	45'921	45'794	45'667	45'540	45'412	45'283	45'154	45'024	44'893	44'762
'5	46'387	46'262	46'136	46'009	45'882	45'755	45'626	45'498	45'368	45'238
'4	46'853	46'729	46'604	46'479	46'353	46'226	46'099	45'972	45'843	45'714
'3	47'319	47'196	47'073	46'948	46'824	46'698	46'572	46'445	46'318	46'190
'2	47'786	47'664	47'541	47'418	47'294	47'170	47'045	46'919	46'793	46'667
'1	48'252	48'131	48'009	47'887	47'765	47'642	47'518	47'393	47'268	47'143
'0	48'718	48'598	48'478	48'357	48'235	48'113	47'991	47'867	47'743	47'619
10'9	49'184	49'065	48'946	48'826	48'706	48'585	48'463	48'341	48'219	48'095
'8	49'650	49'533	49'415	49'296	49'176	49'057	48'936	48'815	48'694	48'571
'7	50'117	50'000	49'883	49'765	49'647	49'528	49'409	49'289	49'169	49'048
'6	50'583	50'467	50'351	50'235	50'118	50'000	49'882	49'763	49'644	49'524
'5	51'049	50'935	50'820	50'704	50'588	50'472	50'355	50'237	50'119	50'000
'4	51'515	51'402	51'288	51'174	51'059	50'943	50'827	50'711	50'594	50'476
'3	51'981	51'869	51'756	51'643	51'529	51'415	51'300	51'185	51'069	50'952
'2	52'448	52'336	52'225	52'113	52'000	51'887	51'773	51'659	51'544	51'429
'1	52'914	52'804	52'693	52'582	52'471	52'358	52'246	52'133	52'019	51'905
'0	53'380	53'271	53'162	53'052	52'941	52'830	52'719	52'607	52'494	52'381
9'9	53'846	53'738	53'630	53'521	53'412	53'302	53'191	53'081	52'969	52'857
'8	54'312	54'206	54'098	53'991	53'882	53'774	53'664	53'554	53'444	53'333
'7	54'779	54'673	54'567	54'460	54'353	54'245	54'137	54'028	53'919	53'810
'6	55'245	55'140	55'035	54'930	54'824	54'717	54'610	54'502	54'394	54'286
'5	55'711	55'607	55'504	55'399	55'294	55'189	55'083	54'976	54'869	54'762
'4	56'177	56'075	55'972	55'869	55'765	55'660	55'556	55'450	55'344	55'238
'3	56'643	56'542	56'440	56'338	56'235	56'132	56'028	55'924	55'819	55'714
'2	57'110	57'009	56'909	56'808	56'706	56'604	56'501	56'398	56'295	56'190
'1	57'576	57'477	57'377	57'277	57'176	57'075	56'974	56'872	56'770	56'667
'0	58'042	57'944	57'845	57'746	57'647	57'547	57'447	57'346	57'245	57'143
8'9	58'508	58'411	58'314	58'216	58'118	58'019	57'920	57'820	57'720	57'619
'8	58'974	58'879	58'782	58'685	58'588	58'491	58'392	58'294	58'195	58'095
'7	59'441	59'346	59'251	59'155	59'059	58'962	58'865	58'768	58'670	58'571
'6	59'907	59'813	59'719	59'624	59'529	59'434	59'338	59'242	59'145	59'048
'5	60'373	60'280	60'187	60'094	60'000	59'906	59'811	59'716	59'620	59'524
'4	60'839	60'748	60'656	60'563	60'471	60'377	60'284	60'190	60'095	60'000
'3	61'305	61'215	61'124	61'033	60'941	60'849	60'756	60'664	60'570	60'476
'2	61'772	61'682	61'593	61'502	61'412	61'321	61'229	61'137	61'045	60'952
'1	62'238	62'150	62'061	61'972	61'882	61'792	61'702	61'611	61'520	61'429
'0	62'704	62'617	62'529	62'441	62'353	62'264	62'175	62'085	61'995	61'905
7'9	63'170	63'084	62'998	62'911	62'824	62'736	62'648	62'559	62'470	62'381
'8	63'636	63'551	63'466	63'380	63'294	63'208	63'121	63'033	62'945	62'857
'7	64'103	64'019	63'934	63'850	63'765	63'679	63'593	63'507	63'420	63'333
'6	64'569	64'486	64'403	64'319	64'235	64'151	64'066	63'981	63'895	63'810
'5	65'035	64'953	64'871	64'789	64'706	64'623	64'539	64'455	64'371	64'286



$1 + a_x$ 

21	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+11}$										
74	65'501	65'421	65'340	65'258	65'176	65'094	65'012	64'929	64'846	64'762
'3	65'967	65'888	65'808	65'728	65'647	65'566	65'485	65'403	65'321	65'238
'2	66'434	66'355	66'276	66'197	66'118	66'038	65'957	65'877	65'796	65'714
'1	66'900	66'822	66'745	66'667	66'588	66'509	66'430	66'351	66'271	66'190
'0	67'366	67'290	67'213	67'136	67'059	66'981	66'903	66'825	66'746	66'667
69	67'832	67'757	67'682	67'606	67'529	67'453	67'376	67'299	67'221	67'143
'8	68'298	68'224	68'150	68'075	68'000	67'925	67'849	67'773	67'696	67'619
'7	68'765	68'692	68'618	68'545	68'471	68'396	68'322	68'246	68'171	68'095
'6	69'231	69'159	69'087	69'014	68'941	68'868	68'794	68'720	68'646	68'571
'5	69'697	69'626	69'555	69'484	69'412	69'340	69'267	69'194	69'121	69'048
'4	70'163	70'093	70'023	69'953	69'882	69'811	69'740	69'668	69'596	69'524
'3	70'629	70'561	70'492	70'423	70'353	70'283	70'213	70'142	70'071	70'000
'2	71'096	71'028	70'960	70'892	70'824	70'755	70'686	70'616	70'546	70'476
'1	71'562	71'495	71'429	71'362	71'294	71'226	71'158	71'090	71'021	70'952
'0	72'028	71'963	71'897	71'831	71'765	71'698	71'631	71'564	71'496	71'429
59	72'494	72'430	72'365	72'300	72'235	72'170	72'104	72'038	71'971	71'905
'8	72'960	72'897	72'834	72'770	72'706	72'642	72'577	72'512	72'447	72'381
'7	73'427	73'364	73'302	73'239	73'176	73'113	73'050	72'986	72'922	72'857
'6	73'893	73'832	73'770	73'709	73'647	73'585	73'522	73'460	73'397	73'333
'5	74'359	74'299	74'239	74'178	74'118	74'057	73'995	73'934	73'872	73'810
'4	74'825	74'766	74'707	74'648	74'588	74'528	74'468	74'408	74'347	74'286
'3	75'291	75'234	75'176	75'117	75'059	75'000	74'941	74'882	74'822	74'762
'2	75'758	75'701	75'644	75'587	75'529	75'472	75'414	75'355	75'297	75'238
'1	76'224	76'168	76'112	76'056	76'000	75'943	75'887	75'829	75'772	75'714
'0	76'690	76'636	76'581	76'526	76'471	76'415	76'359	76'303	76'247	76'190
49	77'156	77'103	77'049	76'995	76'941	76'887	76'832	76'777	76'722	76'667
'8	77'622	77'570	77'518	77'465	77'412	77'358	77'305	77'251	77'197	77'143
'7	78'089	78'037	77'986	77'934	77'882	77'830	77'778	77'725	77'672	77'619
'6	78'555	78'505	78'454	78'404	78'353	78'302	78'251	78'199	78'147	78'095
'5	79'021	78'972	78'923	78'873	78'824	78'774	78'723	78'673	78'622	78'571
'4	79'487	79'439	79'391	79'343	79'294	79'245	79'196	79'147	79'097	79'048
'3	79'953	79'907	79'859	79'812	79'765	79'717	79'669	79'621	79'572	79'524
'2	80'420	80'374	80'328	80'282	80'235	80'189	80'142	80'095	80'048	80'000
'1	80'886	80'841	80'796	80'751	80'706	80'660	80'615	80'569	80'523	80'476
'0	81'352	81'308	81'265	81'221	81'176	81'132	81'087	81'043	80'998	80'952
39	81'818	81'776	81'733	81'690	81'647	81'604	81'560	81'517	81'473	81'429
'8	82'284	82'243	82'201	82'160	82'118	82'075	82'033	81'991	81'948	81'905
'7	82'751	82'710	82'670	82'629	82'588	82'547	82'506	82'464	82'423	82'381
'6	83'217	83'178	83'138	83'099	83'059	83'019	82'979	82'938	82'898	82'857
'5	83'683	83'645	83'607	83'568	83'529	83'491	83'452	83'412	83'373	83'333
'01	·017	·017	·017	·017	·017	·017	·017	·017	·018	·018
'02	·093	·093	·094	·094	·094	·094	·095	·095	·095	·095
'03	·140	·140	·141	·141	·141	·142	·142	·142	·143	·143
'04	·186	·187	·187	·188	·188	·189	·189	·190	·190	·190
'05	·233	·231	·231	·235	·235	·236	·236	·237	·238	·238
'06	·280	·280	·281	·282	·282	·283	·284	·284	·285	·286
'07	·326	·327	·328	·329	·329	·330	·331	·332	·333	·333
'08	·373	·371	·375	·376	·376	·377	·378	·379	·380	·381
'09	·420	·421	·422	·423	·421	·425	·426	·427	·428	·429



$1 + a_x$ 

21	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
3'4	84'149	84'112	84'075	84'038	84'000	83'962	83'924	83'886	83'848	83'810
'3	84'615	84'579	84'543	84'507	84'471	84'434	84'397	84'360	84'323	84'286
'2	85'082	85'047	85'012	84'977	84'941	84'906	84'870	84'834	84'798	84'762
'1	85'548	85'514	85'480	85'446	85'412	85'377	85'343	85'308	85'273	85'238
'0	86'014	85'981	85'948	85'915	85'882	85'849	85'816	85'782	85'748	85'714
2'9	86'480	86'449	86'417	86'385	86'353	86'321	86'288	86'256	86'223	86'190
'8	86'946	86'916	86'885	86'854	86'824	86'792	86'761	86'730	86'698	86'667
'7	87'413	87'383	87'354	87'324	87'294	87'264	87'234	87'204	87'173	87'143
'6	87'879	87'850	87'822	87'793	87'765	87'736	87'707	87'678	87'648	87'619
'5	88'345	88'318	88'290	88'263	88'235	88'208	88'180	88'152	88'124	88'095
'4	88'811	88'785	88'759	88'732	88'706	88'679	88'652	88'626	88'599	88'571
'3	89'277	89'252	89'227	89'202	89'176	89'151	89'125	89'100	89'074	89'048
'2	89'744	89'720	89'696	89'671	89'647	89'623	89'598	89'573	89'549	89'524
'1	90'210	90'187	90'164	90'141	90'118	90'094	90'071	90'047	90'024	90'000
'0	90'676	90'654	90'632	90'610	90'588	90'566	90'544	90'521	90'499	90'476
1'9	91'142	91'121	91'101	91'080	91'059	91'038	91'017	90'995	90'974	90'952
'8	91'608	91'589	91'569	91'549	91'529	91'509	91'489	91'469	91'449	91'429
'7	92'075	92'056	92'037	92'019	92'000	91'981	91'962	91'943	91'924	91'905
'6	92'541	92'523	92'506	92'488	92'471	92'453	92'435	92'417	92'399	92'381
'5	93'007	92'991	92'974	92'958	92'941	92'925	92'908	92'891	92'874	92'857
'4	93'473	93'458	93'443	93'427	93'412	93'396	93'381	93'365	93'349	93'333
'3	93'939	93'925	93'911	93'897	93'882	93'868	93'853	93'839	93'824	93'810
'2	94'406	94'393	94'379	94'366	94'353	94'340	94'326	94'313	94'299	94'286
'1	94'872	94'860	94'848	94'836	94'824	94'811	94'799	94'787	94'774	94'762
'0	95'338	95'327	95'316	95'305	95'294	95'283	95'272	95'261	95'249	95'238
'01	'017	'017	'017	'017	'017	'047	'047	'047	'048	'048
'02	'093	'093	'094	'094	'094	'094	'095	'095	'095	'095
'03	'140	'140	'141	'141	'141	'142	'142	'142	'143	'143
'04	'186	'187	'187	'188	'188	'189	'189	'190	'190	'190
'05	'233	'234	'234	'235	'235	'236	'236	'237	'238	'238
'06	'280	'280	'281	'282	'282	'283	'284	'284	'285	'286
'07	'326	'327	'328	'329	'329	'330	'331	'332	'333	'333
'08	'373	'374	'375	'376	'376	'377	'378	'379	'380	'381
'09	'420	'421	'422	'423	'424	'425	'426	'427	'428	'429
20	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
20'9	'239	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	'716	'478	'240	'000	'000	'000	'000	'000	'000	'000
'7	1'193	'957	'719	'481	'241	'000	'000	'000	'000	'000
'6	1'671	1'435	1'199	'962	'723	'483	'242	'000	'000	'000
'5	2'148	1'914	1'679	1'442	1'205	'966	'726	'485	'243	'000
'4	2'625	2'392	2'158	1'923	1'687	1'449	1'211	'971	'730	'488
'3	3'103	2'871	2'638	2'404	2'169	1'932	1'695	1'456	1'217	'976
'2	3'580	3'349	3'118	2'885	2'651	2'415	2'179	1'942	1'703	1'463
'1	4'057	3'828	3'597	3'365	3'133	2'899	2'663	2'427	2'190	1'951
'0	4'535	4'306	4'077	3'846	3'614	3'382	3'148	2'913	2'676	2'439

$1+a_x$ 

20	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
19'9	5'012	4'785	4'556	4'327	4'096	3'865	3'632	3'398	3'163	2'927
'8	5'489	5'263	5'036	4'808	4'578	4'348	4'116	3'883	3'650	3'415
'7	5'967	5'742	5'516	5'288	5'060	4'831	4'600	4'369	4'136	3'902
'6	6'444	6'220	5'995	5'769	5'542	5'314	5'085	4'854	4'623	4'390
'5	6'921	6'699	6'475	6'250	6'024	5'797	5'569	5'340	5'109	4'878
'4	7'399	7'177	6'954	6'731	6'506	6'280	6'053	5'825	5'596	5'366
'3	7'876	7'656	7'434	7'212	6'988	6'763	6'538	6'311	6'083	5'854
'2	8'353	8'134	7'914	7'692	7'470	7'246	7'022	6'796	6'569	6'341
'1	8'831	8'612	8'393	8'173	7'952	7'729	7'506	7'282	7'056	6'829
'0	9'308	9'091	8'873	8'654	8'434	8'213	7'990	7'767	7'543	7'317
18'9	9'785	9'569	9'353	9'135	8'916	8'696	8'475	8'252	8'029	7'805
'8	10'263	10'048	9'832	9'615	9'398	9'179	8'959	8'738	8'516	8'293
'7	10'740	10'526	10'312	10'096	9'880	9'662	9'443	9'223	9'002	8'780
'6	11'217	11'005	10'791	10'577	10'361	10'145	9'927	9'709	9'489	9'268
'5	11'695	11'483	11'271	11'058	10'843	10'628	10'412	10'194	9'976	9'756
'4	12'172	11'962	11'751	11'538	11'325	11'111	10'896	10'680	10'462	10'244
'3	12'649	12'440	12'230	12'019	11'807	11'594	11'380	11'165	10'949	10'732
'2	13'126	12'919	12'710	12'500	12'289	12'077	11'864	11'650	11'436	11'220
'1	13'604	13'397	13'189	12'981	12'771	12'560	12'349	12'136	11'922	11'707
'0	14'081	13'876	13'669	13'462	13'253	13'043	12'833	12'621	12'409	12'195
17'9	14'558	14'354	14'149	13'942	13'735	13'527	13'317	13'107	12'895	12'683
'8	15'036	14'833	14'628	14'423	14'217	14'010	13'801	13'592	13'382	13'171
'7	15'513	15'311	15'108	14'904	14'699	14'493	14'286	14'078	13'869	13'659
'6	15'990	15'789	15'588	15'385	15'181	14'976	14'770	14'563	14'355	14'146
'5	16'468	16'268	16'067	15'865	15'663	15'459	15'254	15'049	14'842	14'634
'4	16'945	16'746	16'547	16'346	16'145	15'942	15'738	15'534	15'328	15'122
'3	17'422	17'225	17'026	16'827	16'627	16'425	16'223	16'019	15'815	15'610
'2	17'900	17'703	17'506	17'308	17'108	16'908	16'707	16'505	16'302	16'098
'1	18'377	18'182	17'986	17'788	17'590	17'391	17'191	16'990	16'788	16'585
'0	18'854	18'660	18'465	18'269	18'072	17'874	17'676	17'476	17'275	17'073
16'9	19'332	19'139	18'945	18'750	18'554	18'357	18'160	17'961	17'762	17'561
'8	19'809	19'617	19'424	19'231	19'036	18'841	18'644	18'447	18'248	18'049
'7	20'286	20'096	19'904	19'712	19'518	19'324	19'128	18'932	18'735	18'537
'6	20'764	20'574	20'384	20'192	20'000	19'807	19'613	19'417	19'221	19'024
'5	21'241	21'053	20'863	20'673	20'482	20'290	20'097	19'903	19'708	19'512
'4	21'718	21'531	21'343	21'154	20'964	20'773	20'581	20'388	20'195	20'000
'3	22'196	22'010	21'823	21'635	21'446	21'256	21'065	20'874	20'681	20'488
'2	22'673	22'488	22'302	22'115	21'928	21'739	21'550	21'359	21'168	20'976
'1	23'150	22'967	22'782	22'596	22'410	22'222	22'034	21'845	21'655	21'463
'0	23'628	23'445	23'261	23'077	22'892	22'705	22'518	22'330	22'141	21'951
'01	'048	'048	'048	'048	'048	'048	'048	'049	'049	'049
'02	'095	'096	'096	'096	'096	'097	'097	'097	'097	'098
'03	'143	'144	'144	'144	'145	'145	'145	'146	'146	'146
'04	'191	'191	'192	'192	'193	'193	'194	'194	'195	'195
'05	'239	'239	'240	'240	'241	'242	'242	'243	'243	'244
'06	'286	'287	'288	'288	'289	'290	'291	'291	'292	'293
'07	'334	'335	'336	'337	'337	'338	'339	'340	'341	'341
'08	'382	'383	'384	'385	'386	'386	'387	'388	'389	'390
'09	'430	'431	'432	'433	'434	'435	'436	'437	'438	'439

$1 + \alpha_x$

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + \alpha_{x+1}$										
15'9	24'105	23'923	23'741	23'558	23'373	23'188	23'002	22'816	22'628	22'439
'8	24'582	24'402	24'221	24'038	23'855	23'671	23'487	23'301	23'114	22'927
'7	25'060	24'880	24'700	24'519	24'337	24'155	23'971	23'786	23'601	23'415
'6	25'537	25'359	25'180	25'000	24'819	24'638	24'455	24'272	24'088	23'902
'5	26'014	25'837	25'659	25'481	25'301	25'121	24'939	24'757	24'574	24'390
'4	26'492	26'316	26'139	25'962	25'783	25'604	25'424	25'243	25'061	24'878
'3	26'969	26'794	26'619	26'442	26'265	26'087	25'908	25'728	25'547	25'366
'2	27'446	27'273	27'098	26'923	26'747	26'570	26'392	26'214	26'034	25'854
'1	27'924	27'751	27'578	27'404	27'229	27'053	26'877	26'699	26'521	26'341
'0	28'401	28'230	28'058	27'885	27'711	27'536	27'361	27'184	27'007	26'829
14'9	28'878	28'708	28'537	28'365	28'193	28'019	27'845	27'670	27'494	27'317
'8	29'356	29'187	29'017	28'846	28'675	28'502	28'329	28'155	27'981	27'805
'7	29'833	29'665	29'496	29'327	29'157	28'986	28'814	28'641	28'467	28'293
'6	30'310	30'144	29'976	29'808	29'639	29'469	29'298	29'126	28'954	28'780
'5	30'788	30'622	30'456	30'288	30'120	29'952	29'782	29'612	29'440	29'268
'4	31'265	31'100	30'935	30'769	30'602	30'435	30'266	30'097	29'927	29'756
'3	31'742	31'579	31'415	31'250	31'084	30'918	30'751	30'583	30'414	30'244
'2	32'220	32'057	31'894	31'731	31'566	31'401	31'235	31'068	30'900	30'732
'1	32'697	32'536	32'374	32'212	32'048	31'884	31'719	31'553	31'387	31'220
'0	33'174	33'014	32'854	32'692	32'530	32'367	32'203	32'039	31'873	31'707
13'9	33'652	33'493	33'333	33'173	33'012	32'850	32'688	32'524	32'360	32'195
'8	34'129	33'971	33'813	33'654	33'494	33'333	33'172	33'010	32'847	32'683
'7	34'606	34'450	34'293	34'135	33'976	33'816	33'656	33'495	33'333	33'171
'6	35'084	34'928	34'772	34'615	34'458	34'300	34'140	33'981	33'820	33'659
'5	35'561	35'407	35'252	35'096	34'940	34'783	34'625	34'466	34'307	34'146
'4	36'038	35'885	35'731	35'577	35'422	35'266	35'109	34'951	34'793	34'634
'3	36'516	36'364	36'211	36'058	35'904	35'749	35'593	35'437	35'280	35'122
'2	36'993	36'842	36'691	36'538	36'386	36'232	36'077	35'922	35'766	35'610
'1	37'470	37'321	37'170	37'019	36'867	36'715	36'562	36'408	36'253	36'098
'0	37'947	37'799	37'650	37'500	37'349	37'198	37'046	36'893	36'740	36'585
12'9	38'425	38'278	38'129	37'981	37'831	37'681	37'530	37'379	37'226	37'073
'8	38'902	38'756	38'609	38'462	38'313	38'164	38'015	37'864	37'713	37'561
'7	39'379	39'234	39'089	38'942	38'795	38'647	38'499	38'350	38'200	38'049
'6	39'857	39'713	39'568	39'423	39'277	39'130	38'983	38'835	38'686	38'537
'5	40'334	40'191	40'048	39'904	39'759	39'614	39'467	39'320	39'173	39'024
'4	40'811	40'670	40'528	40'385	40'241	40'097	39'952	39'806	39'659	39'512
'3	41'289	41'148	41'007	40'865	40'723	40'580	40'436	40'291	40'146	40'000
'2	41'766	41'627	41'487	41'346	41'205	41'063	40'920	40'777	40'633	40'488
'1	42'243	42'105	41'966	41'827	41'687	41'546	41'404	41'262	41'119	40'976
'0	42'721	42'584	42'446	42'308	42'169	42'029	41'889	41'748	41'606	41'463
11'9	43'198	43'062	42'926	42'788	42'651	42'512	42'373	42'233	42'092	41'951
'8	43'675	43'541	43'405	43'269	43'133	42'995	42'857	42'718	42'579	42'439
'7	44'153	44'019	43'885	43'750	43'614	43'478	43'341	43'204	43'066	42'927
'6	44'630	44'498	44'365	44'231	44'096	43'961	43'826	43'689	43'552	43'415
'5	45'107	44'976	44'844	44'712	44'578	44'444	44'310	44'175	44'039	43'902
'4	45'585	45'455	45'324	45'192	45'060	44'928	44'794	44'660	44'526	44'390
'3	46'062	45'933	45'803	45'673	45'542	45'411	45'278	45'146	45'012	44'878
'2	46'539	46'411	46'283	46'154	46'024	45'894	45'763	45'631	45'499	45'366
'1	47'017	46'890	46'763	46'635	46'506	46'377	46'247	46'117	45'985	45'854
'0	47'494	47'368	47'242	47'115	46'988	46'860	46'731	46'602	46'472	46'341



$1 + a_x$ 

20	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
10'9	47'971	47'847	47'722	47'596	47'470	47'343	47'215	47'087	46'959	46'829
'8	48'449	48'325	48'201	48'077	47'952	47'826	47'700	47'573	47'445	47'317
'7	48'926	48'804	48'681	48'558	48'434	48'309	48'184	48'058	47'932	47'805
'6	49'403	49'282	49'161	49'038	48'916	48'792	48'668	48'544	48'418	48'293
'5	49'881	49'761	49'640	49'519	49'398	49'275	49'153	49'029	48'905	48'780
'4	50'358	50'239	50'120	50'000	49'880	49'758	49'637	49'515	49'392	49'268
'3	50'835	50'718	50'600	50'481	50'361	50'242	50'121	50'000	49'878	49'756
'2	51'313	51'196	51'079	50'962	50'843	50'725	50'605	50'485	50'365	50'244
'1	51'790	51'675	51'559	51'442	51'325	51'208	51'090	50'971	50'852	50'732
'0	52'267	52'153	52'038	51'923	51'807	51'691	51'574	51'456	51'338	51'220
9'9	52'745	52'632	52'518	52'404	52'289	52'174	52'058	51'942	51'825	51'707
'8	53'222	53'110	52'998	52'885	52'771	52'657	52'542	52'427	52'311	52'195
'7	53'699	53'589	53'477	53'365	53'253	53'140	53'027	52'913	52'798	52'683
'6	54'177	54'067	53'957	53'846	53'735	53'623	53'511	53'398	53'285	53'171
'5	54'654	54'545	54'436	54'327	54'217	54'106	53'995	53'883	53'771	53'659
'4	55'131	55'024	54'916	54'808	54'699	54'589	54'479	54'369	54'258	54'146
'3	55'609	55'502	55'396	55'288	55'181	55'072	54'964	54'854	54'745	54'634
'2	56'086	55'981	55'875	55'769	55'663	55'556	55'448	55'340	55'231	55'122
'1	56'563	56'459	56'355	56'250	56'145	56'039	55'932	55'825	55'718	55'610
'0	57'041	56'938	56'835	56'731	56'627	56'522	56'416	56'311	56'204	56'098
8'9	57'518	57'416	57'314	57'212	57'108	57'005	56'901	56'796	56'691	56'585
'8	57'995	57'895	57'794	57'692	57'590	57'488	57'385	57'282	57'178	57'073
'7	58'473	58'373	58'273	58'173	58'072	57'971	57'869	57'767	57'664	57'561
'6	58'950	58'852	58'753	58'654	58'554	58'454	58'354	58'252	58'151	58'049
'5	59'427	59'330	59'233	59'135	59'036	58'937	58'838	58'738	58'637	58'537
'4	59'905	59'809	59'712	59'615	59'518	59'420	59'322	59'223	59'124	59'024
'3	60'382	60'287	60'192	60'096	60'000	59'903	59'806	59'709	59'611	59'512
'2	60'859	60'766	60'671	60'577	60'482	60'386	60'291	60'194	60'097	60'000
'1	61'337	61'244	61'151	61'058	60'964	60'870	60'775	60'680	60'584	60'488
'0	61'814	61'722	61'631	61'538	61'446	61'353	61'259	61'165	61'071	60'976
7'9	62'291	62'201	62'110	62'019	61'928	61'836	61'743	61'650	61'557	61'463
'8	62'769	62'679	62'590	62'500	62'410	62'319	62'228	62'136	62'044	61'951
'7	63'246	63'158	63'070	62'981	62'892	62'802	62'712	62'621	62'530	62'439
'6	63'723	63'636	63'549	63'462	63'373	63'285	63'196	63'107	63'017	62'927
'5	64'200	64'115	64'029	63'942	63'855	63'768	63'680	63'592	63'504	63'415
'4	64'678	64'593	64'508	64'423	64'337	64'251	64'165	64'078	63'990	63'902
'3	65'155	65'072	64'988	64'904	64'819	64'734	64'649	64'563	64'477	64'390
'2	65'632	65'550	65'468	65'385	65'301	65'217	65'133	65'049	64'964	64'878
'1	66'110	66'029	65'947	65'865	65'783	65'700	65'617	65'534	65'450	65'366
'0	66'587	66'507	66'427	66'346	66'265	66'184	66'102	66'019	65'937	65'854
'01	·048	·048	·048	·048	·048	·048	·048	·049	·049	·049
'02	·095	·096	·096	·096	·096	·097	·097	·097	·097	·098
'03	·143	·144	·144	·144	·145	·145	·145	·146	·146	·146
'04	·191	·191	·192	·192	·193	·193	·194	·194	·195	·195
'05	·239	·239	·240	·240	·241	·242	·242	·243	·243	·244
'06	·286	·287	·288	·288	·289	·290	·291	·291	·292	·293
'07	·334	·335	·336	·337	·337	·338	·339	·340	·341	·341
'08	·382	·383	·384	·385	·386	·386	·387	·388	·389	·390
'09	·430	·431	·432	·433	·434	·435	·436	·437	·438	·439



$1 + a_x$ 

20	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
6'9	67'064	66'986	66'906	66'827	66'747	66'667	66'586	66'505	66'423	66'341
'8	67'542	67'464	67'386	67'308	67'229	67'150	67'070	66'990	66'910	66'829
'7	68'019	67'943	67'866	67'788	67'711	67'633	67'554	67'476	67'397	67'317
'6	68'496	68'421	68'345	68'269	68'193	68'116	68'039	67'961	67'883	67'805
'5	68'974	68'900	68'825	68'750	68'675	68'599	68'523	68'447	68'370	68'293
'4	69'451	69'378	69'305	69'231	69'157	69'082	69'007	68'932	68'856	68'780
'3	69'928	69'856	69'784	69'712	69'639	69'565	69'492	69'417	69'343	69'268
'2	70'406	70'335	70'264	70'192	70'120	70'048	69'976	69'903	69'830	69'756
'1	70'883	70'813	70'743	70'673	70'602	70'531	70'460	70'388	70'316	70'244
'0	71'360	71'292	71'223	71'154	71'084	71'014	70'944	70'874	70'803	70'732
5'9	71'838	71'770	71'703	71'635	71'566	71'498	71'429	71'359	71'290	71'220
'8	72'315	72'249	72'182	72'115	72'048	71'981	71'913	71'845	71'776	71'707
'7	72'792	72'727	72'662	72'596	72'530	72'464	72'397	72'330	72'263	72'195
'6	73'270	73'206	73'141	73'077	73'012	72'947	72'881	72'816	72'749	72'683
'5	73'747	73'684	73'621	73'558	73'494	73'430	73'366	73'301	73'236	73'171
'4	74'224	74'163	74'101	74'038	73'976	73'913	73'850	73'786	73'723	73'659
'3	74'702	74'641	74'580	74'519	74'458	74'396	74'334	74'272	74'209	74'146
'2	75'179	75'120	75'060	75'000	74'940	74'879	74'818	74'757	74'696	74'634
'1	75'656	75'598	75'540	75'481	75'422	75'362	75'303	75'243	75'182	75'122
'0	76'134	76'077	76'019	75'962	75'904	75'845	75'787	75'728	75'669	75'610
4'9	76'611	76'555	76'499	76'442	76'386	76'329	76'271	76'214	76'156	76'098
'8	77'088	77'033	76'978	76'923	76'867	76'812	76'755	76'699	76'642	76'585
'7	77'566	77'512	77'458	77'404	77'349	77'295	77'240	77'184	77'129	77'073
'6	78'043	77'990	77'938	77'885	77'831	77'778	77'724	77'670	77'616	77'561
'5	78'520	78'469	78'417	78'365	78'313	78'261	78'208	78'155	78'102	78'049
'4	78'998	78'947	78'897	78'846	78'795	78'744	78'692	78'641	78'589	78'537
'3	79'475	79'426	79'376	79'327	79'277	79'227	79'177	79'126	79'075	79'024
'2	79'952	79'904	79'856	79'808	79'759	79'710	79'661	79'612	79'562	79'512
'1	80'430	80'383	80'336	80'288	80'241	80'193	80'145	80'097	80'049	80'000
'0	80'907	80'861	80'815	80'769	80'723	80'676	80'630	80'583	80'535	80'488
3'9	81'384	81'340	81'295	81'250	81'205	81'159	81'114	81'068	81'022	80'976
'8	81'862	81'818	81'775	81'731	81'687	81'643	81'598	81'553	81'509	81'463
'7	82'339	82'297	82'254	82'212	82'169	82'126	82'082	82'039	81'995	81'951
'6	82'816	82'775	82'734	82'692	82'651	82'609	82'567	82'524	82'482	82'439
'5	83'294	83'254	83'213	83'173	83'133	83'092	83'051	83'010	82'968	82'927
'4	83'771	83'732	83'693	83'654	83'614	83'575	83'535	83'495	83'455	83'415
'3	84'248	84'211	84'173	84'135	84'096	84'058	84'019	83'981	83'942	83'902
'2	84'726	84'689	84'652	84'615	84'578	84'541	84'504	84'466	84'428	84'390
'1	85'203	85'167	85'132	85'096	85'060	85'024	84'988	84'951	84'915	84'878
'0	85'680	85'646	85'612	85'577	85'542	85'507	85'472	85'437	85'401	85'366
2'9	86'158	86'124	86'091	86'058	86'024	85'990	85'956	85'922	85'888	85'854
'8	86'635	86'603	86'571	86'538	86'506	86'473	86'441	86'408	86'375	86'341
'7	87'112	87'081	87'050	87'019	86'988	86'957	86'925	86'893	86'861	86'829
'6	87'590	87'560	87'530	87'500	87'470	87'440	87'409	87'379	87'348	87'317
'5	88'067	88'038	88'010	87'981	87'952	87'923	87'893	87'864	87'835	87'805
'4	88'544	88'517	88'489	88'462	88'434	88'406	88'378	88'350	88'321	88'293
'3	89'021	88'995	88'969	88'942	88'916	88'889	88'862	88'835	88'808	88'780
'2	89'499	89'474	89'448	89'423	89'398	89'372	89'346	89'320	89'294	89'268
'1	89'976	89'952	89'928	89'904	89'880	89'855	89'831	89'806	89'781	89'756
'0	90'453	90'431	90'408	90'385	90'361	90'338	90'315	90'291	90'268	90'244

$$1 + a_x$$

20	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
1'9	90'931	90'909	90'887	90'865	90'843	90'821	90'799	90'777	90'754	90'732
'8	91'408	91'388	91'367	91'346	91'325	91'304	91'283	91'262	91'241	91'220
'7	91'885	91'866	91'847	91'827	91'807	91'787	91'768	91'748	91'727	91'707
'6	92'363	92'344	92'326	92'308	92'289	92'271	92'252	92'233	92'214	92'195
'5	92'840	92'823	92'806	92'788	92'771	92'754	92'736	92'718	92'701	92'683
'4	93'317	93'301	93'285	93'269	93'253	93'237	93'220	93'204	93'187	93'171
'3	93'795	93'780	93'765	93'750	93'735	93'720	93'705	93'689	93'674	93'659
'2	94'272	94'258	94'245	94'231	94'217	94'203	94'189	94'175	94'161	94'146
'1	94'749	94'737	94'724	94'712	94'699	94'686	94'673	94'660	94'647	94'634
'0	95'227	95'215	95'204	95'192	95'181	95'169	95'157	95'146	95'134	95'122

'01	'018	'048	'048	'048	'048	'048	'048	'049	'049	'049
'02	'095	'096	'096	'096	'096	'097	'097	'097	'097	'098
'03	'143	'144	'144	'144	'145	'145	'145	'146	'146	'146
'04	'191	'191	'192	'192	'193	'193	'194	'194	'195	'195
'05	'239	'239	'240	'240	'241	'242	'242	'243	'243	'244
'06	'286	'287	'288	'288	'289	'290	'291	'291	'292	'293
'07	'334	'335	'336	'337	'337	'338	'339	'340	'341	'341
'08	'382	'383	'384	'385	'386	'386	'387	'388	'389	'390
'09	'430	'431	'432	'433	'434	'435	'436	'437	'438	'439

20	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
20'4	'244	'000	'000	'000	'000	.000	'000	'000	'000	'000
'3	'733	'490	'246	'000	'000	.000	'000	'000	'000	'000
'2	1'222	'980	'737	'493	'247	'000	'000	'000	'000	'000
'1	1'711	1'471	1'229	'985	'741	'495	'248	'000	'000	'000
'0	2'200	1'961	1'720	1'478	1'235	'990	'744	'498	'249	'000
19'9	2'689	2'451	2'211	1'970	1'728	1'485	1'241	'995	'748	'500
'8	3'178	2'941	2'703	2'463	2'222	1'980	1'737	1'493	1'247	1'000
'7	3'667	3'431	3'194	2'956	2'716	2'475	2'233	1'990	1'746	1'500
'6	4'156	3'922	3'686	3'448	3'210	2'970	2'730	2'488	2'244	2'000
'5	4'645	4'412	4'177	3'941	3'704	3'465	3'226	2'985	2'743	2'500
'4	5'134	4'902	4'668	4'433	4'198	3'960	3'722	3'483	3'242	3'000
'3	5'623	5'392	5'160	4'926	4'691	4'455	4'218	3'980	3'741	3'500
'2	6'112	5'882	5'651	5'419	5'185	4'950	4'715	4'478	4'239	4'000
'1	6'601	6'373	6'143	5'911	5'679	5'446	5'211	4'975	4'738	4'500
'0	7'090	6'863	6'634	6'404	6'173	5'941	5'707	5'473	5'237	5'000

'01	'049	'049	'049	'049	'049	'050	'050	'050	'050	'050
'02	'098	'098	'098	'099	'099	'099	'099	'100	'100	'100
'03	'147	'147	'147	'148	'148	'149	'149	'149	'150	'150
'04	'196	'196	'197	'197	'198	'198	'199	'199	'200	'200
'05	'244	'245	'246	'246	'247	'248	'248	'249	'249	'250
'06	'293	'294	'295	'296	'296	'297	'298	'299	'299	'300
'07	'342	'343	'344	'345	'346	'347	'347	'348	'349	'350
'08	'391	'392	'393	'394	'395	'396	'397	'398	'399	'400
'09	'440	'441	'442	'443	'444	'446	'447	'448	'449	'450

20	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
18'9	7'579	7'353	7'125	6'897	6'667	6'436	6'203	5'970	5'736	5'500
'8	8'068	7'843	7'617	7'389	7'160	6'931	6'700	6'468	6'234	6'000
'7	8'557	8'333	8'108	7'882	7'654	7'426	7'196	6'965	6'733	6'500
'6	9'046	8'824	8'600	8'374	8'148	7'921	7'692	7'463	7'232	7'000
'5	9'535	9'314	9'091	8'867	8'642	8'416	8'189	7'960	7'731	7'500
'4	10'024	9'804	9'582	9'360	9'136	8'911	8'685	8'458	8'229	8'000
'3	10'513	10'294	10'074	9'852	9'630	9'406	9'181	8'955	8'728	8'500
'2	11'002	10'784	10'565	10'345	10'123	9'901	9'677	9'453	9'227	9'000
'1	11'491	11'275	11'057	10'837	10'617	10'396	10'174	9'950	9'726	9'500
'0	11'980	11'765	11'548	11'330	11'111	10'891	10'670	10'448	10'224	10'000
17'9	12'469	12'255	12'039	11'823	11'605	11'386	11'166	10'945	10'723	10'500
'8	12'958	12'745	12'531	12'315	12'099	11'881	11'663	11'443	11'222	11'000
'7	13'447	13'235	13'022	12'808	12'593	12'376	12'159	11'940	11'721	11'500
'6	13'936	13'725	13'514	13'300	13'086	12'871	12'655	12'438	12'219	12'000
'5	14'425	14'216	14'005	13'793	13'580	13'366	13'151	12'935	12'718	12'500
'4	14'914	14'706	14'496	14'286	14'074	13'861	13'648	13'433	13'217	13'000
'3	15'403	15'196	14'988	14'778	14'568	14'356	14'144	13'930	13'716	13'500
'2	15'892	15'686	15'479	15'271	15'062	14'851	14'640	14'428	14'214	14'000
'1	16'381	16'176	15'971	15'764	15'556	15'347	15'136	14'925	14'713	14'500
'0	16'870	16'667	16'462	16'256	16'049	15'842	15'633	15'423	15'212	15'000
16'9	17'359	17'157	16'953	16'749	16'543	16'337	16'129	15'920	15'711	15'500
'8	17'848	17'647	17'445	17'241	17'037	16'832	16'625	16'418	16'209	16'000
'7	18'337	18'137	17'936	17'734	17'531	17'327	17'122	16'915	16'708	16'500
'6	18'826	18'627	18'428	18'227	18'025	17'822	17'618	17'413	17'207	17'000
'5	19'315	19'118	18'919	18'719	18'519	18'317	18'114	17'910	17'706	17'500
'4	19'804	19'608	19'410	19'212	19'012	18'812	18'610	18'408	18'204	18'000
'3	20'293	20'098	19'902	19'704	19'506	19'307	19'107	18'905	18'703	18'500
'2	20'782	20'588	20'393	20'197	20'000	19'802	19'603	19'403	19'202	19'000
'1	21'271	21'078	20'885	20'690	20'494	20'297	20'099	19'900	19'701	19'500
'0	21'760	21'569	21'376	21'182	20'988	20'792	20'596	20'398	20'200	20'000
15'9	22'249	22'059	21'867	21'675	21'481	21'287	21'092	20'896	20'698	20'500
'8	22'738	22'549	22'359	22'167	21'975	21'782	21'588	21'393	21'197	21'000
'7	23'227	23'039	22'850	22'660	22'469	22'277	22'084	21'891	21'696	21'500
'6	23'716	23'529	23'342	23'153	22'963	22'772	22'581	22'388	22'195	22'000
'5	24'205	24'020	23'833	23'645	23'457	23'267	23'077	22'886	22'693	22'500
'4	24'694	24'510	24'324	24'138	23'951	23'762	23'573	23'383	23'192	23'000
'3	25'183	25'000	24'816	24'631	24'444	24'257	24'069	23'881	23'691	23'500
'2	25'672	25'490	25'307	25'123	24'938	24'752	24'566	24'378	24'190	24'000
'1	26'161	25'980	25'799	25'616	25'432	25'248	25'062	24'876	24'688	24'500
'0	26'650	26'471	26'290	26'108	25'926	25'743	25'558	25'373	25'187	25'000
14'9	27'139	26'961	26'781	26'601	26'420	26'238	26'055	25'871	25'686	25'500
'8	27'628	27'451	27'273	27'094	26'914	26'733	26'551	26'368	26'185	26'000
'7	28'117	27'941	27'764	27'586	27'407	27'228	27'047	26'866	26'683	26'500
'6	28'606	28'431	28'256	28'079	27'901	27'723	27'543	27'363	27'182	27'000
'5	29'095	28'922	28'747	28'571	28'395	28'218	28'040	27'861	27'681	27'500
'4	29'584	29'412	29'238	29'064	28'889	28'713	28'536	28'358	28'180	28'000
'3	30'073	29'902	29'730	29'557	29'383	29'208	29'032	28'856	28'678	28'500
'2	30'562	30'392	30'221	30'049	29'877	29'703	29'529	29'353	29'177	29'000
'1	31'051	30'882	30'713	30'542	30'370	30'198	30'025	29'851	29'676	29'500
'0	31'540	31'373	31'204	31'034	30'864	30'693	30'521	30'348	30'175	30'000



$1 + a_x$ 

20	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
13'9	32'029	31'863	31'695	31'527	31'358	31'188	31'017	30'846	30'673	30'500
'8	32'518	32'353	32'187	32'020	31'852	31'683	31'514	31'343	31'172	31'000
'7	33'007	32'843	32'678	32'512	32'346	32'178	32'010	31'841	31'671	31'500
'6	33'496	33'333	33'170	33'005	32'840	32'673	32'506	32'338	32'170	32'000
'5	33'985	33'824	33'661	33'498	33'333	33'168	33'002	32'836	32'668	32'500
'4	34'474	34'314	34'152	33'990	33'827	33'663	33'499	33'333	33'167	33'000
'3	34'963	34'804	34'644	34'483	34'321	34'158	33'995	33'831	33'666	33'500
'2	35'452	35'294	35'135	34'975	34'815	34'653	34'491	34'328	34'165	34'000
'1	35'941	35'784	35'627	35'468	35'309	35'149	34'988	34'826	34'663	34'500
'0	36'430	36'275	36'118	35'961	35'802	35'644	35'484	35'323	35'162	35'000
12'9	36'919	36'765	36'609	36'453	36'296	36'139	35'980	35'821	35'661	35'500
'8	37'408	37'255	37'101	36'946	36'790	36'634	36'476	36'318	36'160	36'000
'7	37'897	37'745	37'592	37'438	37'284	37'129	36'973	36'816	36'658	36'500
'6	38'386	38'235	38'084	37'931	37'778	37'624	37'469	37'313	37'157	37'000
'5	38'875	38'725	38'575	38'424	38'272	38'119	37'965	37'811	37'656	37'500
'4	39'364	39'216	39'066	38'916	38'765	38'614	38'462	38'308	38'155	38'000
'3	39'853	39'706	39'558	39'409	39'259	39'109	38'958	38'806	38'653	38'500
'2	40'342	40'196	40'049	39'901	39'753	39'604	39'454	39'303	39'152	39'000
'1	40'831	40'686	40'541	40'394	40'247	40'099	39'950	39'801	39'651	39'500
'0	41'320	41'176	41'032	40'887	40'741	40'594	40'447	40'299	40'150	40'000
11'9	41'809	41'667	41'523	41'379	41'235	41'089	40'943	40'796	40'648	40'500
'8	42'298	42'157	42'015	41'872	41'728	41'584	41'439	41'294	41'147	41'000
'7	42'787	42'647	42'506	42'365	42'222	42'079	41'935	41'791	41'646	41'500
'6	43'276	43'137	42'998	42'857	42'716	42'574	42'432	42'289	42'145	42'000
'5	43'765	43'627	43'489	43'350	43'210	43'069	42'928	42'786	42'643	42'500
'4	44'254	44'118	43'980	43'842	43'704	43'564	43'424	43'284	43'142	43'000
'3	44'743	44'608	44'472	44'335	44'198	44'059	43'921	43'781	43'641	43'500
'2	45'232	45'098	44'963	44'828	44'691	44'554	44'417	44'279	44'140	44'000
'1	45'721	45'588	45'455	45'320	45'185	45'050	44'913	44'776	44'638	44'500
'0	46'210	46'078	45'946	45'813	45'679	45'545	45'409	45'274	45'137	45'000
10'9	46'699	46'569	46'437	46'305	46'173	46'040	45'906	45'771	45'636	45'500
'8	47'188	47'059	46'929	46'798	46'667	46'535	46'402	46'269	46'135	46'000
'7	47'677	47'549	47'420	47'291	47'160	47'030	46'898	46'766	46'633	46'500
'6	48'166	48'039	47'912	47'783	47'654	47'525	47'395	47'264	47'132	47'000
'5	48'655	48'529	48'403	48'276	48'148	48'020	47'891	47'761	47'631	47'500
'4	49'144	49'020	48'894	48'768	48'642	48'515	48'387	48'259	48'130	48'000
'3	49'633	49'510	49'386	49'261	49'136	49'010	48'883	48'756	48'628	48'500
'2	50'122	50'000	49'877	49'754	49'630	49'505	49'380	49'254	49'127	49'000
'1	50'611	50'490	50'369	50'246	50'123	50'000	49'876	49'751	49'626	49'500
'0	51'100	50'980	50'860	50'739	50'617	50'495	50'372	50'249	50'125	50'000
'01	'019	'019	'019	'019	'019	'050	'050	'050	'050	'050
'02	'098	'098	'098	'099	'099	'099	'099	'100	'100	'100
'03	'117	'117	'117	'118	'118	'119	'119	'119	'150	'150
'04	'196	'196	'197	'197	'198	'198	'199	'199	'200	'200
'05	'214	'215	'216	'216	'217	'218	'218	'219	'219	'250
'06	'293	'294	'295	'296	'296	'297	'298	'299	'299	'300
'07	'312	'313	'314	'315	'316	'317	'317	'318	'319	'350
'08	'391	'392	'393	'394	'395	'396	'397	'398	'399	'400
'09	'410	'411	'412	'413	'414	'416	'417	'418	'419	'450



$1 + a_x$ 

20	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
9·9	51'589	51'471	51'351	51'232	51'111	50'990	50'868	50'746	50'623	50'500
·8	52'078	51'961	51'843	51'724	51'605	51'485	51'365	51'244	51'122	51'000
·7	52'567	52'451	52'334	52'217	52'099	51'980	51'861	51'741	51'621	51'500
·6	53'056	52'941	52'826	52'709	52'593	52'475	52'357	52'239	52'120	52'000
·5	53'545	53'431	53'317	53'202	53'086	52'970	52'854	52'736	52'618	52'500
·4	54'034	53'922	53'808	53'695	53'580	53'465	53'350	53'234	53'117	53'000
·3	54'523	54'412	54'300	54'187	54'074	53'960	53'846	53'731	53'616	53'500
·2	55'012	54'902	54'791	54'680	54'568	54'455	54'342	54'229	54'115	54'000
·1	55'501	55'392	55'283	55'172	55'062	54'950	54'839	54'726	54'613	54'500
·0	55'990	55'882	55'774	55'665	55'556	55'446	55'335	55'224	55'112	55'000
8·9	56'479	56'373	56'265	56'158	56'049	55'941	55'831	55'721	55'611	55'500
·8	56'968	56'863	56'757	56'650	56'543	56'436	56'328	56'219	56'110	56'000
·7	57'457	57'353	57'248	57'143	57'037	56'931	56'824	56'716	56'608	56'500
·6	57'946	57'843	57'740	57'635	57'531	57'426	57'320	57'214	57'107	57'000
·5	58'435	58'333	58'231	58'128	58'025	57'921	57'816	57'711	57'606	57'500
·4	58'924	58'824	58'722	58'621	58'519	58'416	58'313	58'209	58'105	58'000
·3	59'413	59'314	59'214	59'113	59'012	58'911	58'809	58'706	58'603	58'500
·2	59'902	59'804	59'705	59'606	59'506	59'406	59'305	59'204	59'102	59'000
·1	60'391	60'294	60'197	60'099	60'000	59'901	59'801	59'701	59'601	59'500
·0	60'880	60'784	60'688	60'591	60'494	60'396	60'298	60'199	60'100	60'000
7·9	61'369	61'275	61'179	61'084	60'988	60'891	60'794	60'697	60'599	60'500
·8	61'858	61'765	61'671	61'576	61'481	61'386	61'290	61'194	61'097	61'000
·7	62'347	62'255	62'162	62'069	61'975	61'881	61'787	61'692	61'596	61'500
·6	62'836	62'745	62'654	62'562	62'469	62'376	62'283	62'189	62'095	62'000
·5	63'325	63'235	63'145	63'054	62'963	62'871	62'779	62'687	62'594	62'500
·4	63'814	63'725	63'636	63'547	63'457	63'366	63'275	63'184	63'092	63'000
·3	64'303	64'216	64'128	64'039	63'951	63'861	63'772	63'682	63'591	63'500
·2	64'792	64'706	64'619	64'532	64'444	64'356	64'268	64'179	64'090	64'000
·1	65'281	65'196	65'111	65'025	64'938	64'851	64'764	64'677	64'589	64'500
·0	65'770	65'686	65'602	65'517	65'432	65'347	65'261	65'174	65'087	65'000
6·9	66'259	66'176	66'093	66'010	65'926	65'842	65'757	65'672	65'586	65'500
·8	66'748	66'667	66'585	66'502	66'420	66'337	66'253	66'169	66'085	66'000
·7	67'237	67'157	67'076	66'995	66'914	66'832	66'749	66'667	66'584	66'500
·6	67'726	67'647	67'568	67'488	67'407	67'327	67'246	67'164	67'082	67'000
·5	68'215	68'137	68'059	67'980	67'901	67'822	67'742	67'662	67'581	67'500
·4	68'704	68'627	68'550	68'473	68'395	68'317	68'238	68'159	68'080	68'000
·3	69'193	69'118	69'042	68'966	68'889	68'812	68'734	68'657	68'579	68'500
·2	69'682	69'608	69'533	69'458	69'383	69'307	69'231	69'154	69'077	69'000
·1	70'171	70'098	70'025	69'951	69'877	69'802	69'727	69'652	69'576	69'500
·0	70'660	70'588	70'516	70'443	70'370	70'297	70'223	70'149	70'075	70'000
5·9	71'149	71'078	71'007	70'936	70'864	70'792	70'720	70'647	70'574	70'500
·8	71'638	71'569	71'499	71'429	71'358	71'287	71'216	71'144	71'072	71'000
·7	72'127	72'059	71'990	71'921	71'852	71'782	71'712	71'642	71'571	71'500
·6	72'616	72'549	72'482	72'414	72'346	72'277	72'208	72'139	72'070	72'000
·5	73'105	73'039	72'973	72'906	72'840	72'772	72'705	72'637	72'569	72'500
·4	73'594	73'529	73'464	73'399	73'333	73'267	73'201	73'134	73'067	73'000
·3	74'083	74'020	73'956	73'892	73'827	73'762	73'697	73'632	73'566	73'500
·2	74'572	74'510	74'447	74'384	74'321	74'257	74'194	74'129	74'065	74'000
·1	75'061	75'000	74'939	74'877	74'815	74'752	74'690	74'627	74'564	74'500
·0	75'550	75'490	75'430	75'369	75'309	75'248	75'186	75'124	75'062	75'000

$1 + a_x$ 

20	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
4'9	76'039	75'980	75'921	75'862	75'802	75'743	75'682	75'622	75'561	75'500
'8	76'528	76'471	76'413	76'355	76'296	76'238	76'179	76'119	76'060	76'000
'7	77'017	76'961	76'904	76'847	76'790	76'733	76'675	76'617	76'559	76'500
'6	77'506	77'451	77'396	77'340	77'284	77'228	77'171	77'114	77'057	77'000
'5	77'995	77'941	77'887	77'833	77'778	77'723	77'667	77'612	77'556	77'500
'4	78'484	78'431	78'378	78'325	78'272	78'218	78'164	78'109	78'055	78'000
'3	78'973	78'922	78'870	78'818	78'765	78'713	78'660	78'607	78'554	78'500
'2	79'462	79'412	79'361	79'310	79'259	79'208	79'156	79'104	79'052	79'000
'1	79'951	79'902	79'853	79'803	79'753	79'703	79'653	79'602	79'551	79'500
'0	80'440	80'392	80'344	80'296	80'247	80'198	80'149	80'099	80'050	80'000
3'9	80'929	80'882	80'835	80'788	80'741	80'693	80'645	80'597	80'549	80'500
'8	81'418	81'373	81'327	81'281	81'235	81'188	81'141	81'095	81'047	81'000
'7	81'907	81'863	81'818	81'773	81'728	81'683	81'638	81'592	81'546	81'500
'6	82'396	82'353	82'310	82'266	82'222	82'178	82'134	82'090	82'045	82'000
'5	82'885	82'843	82'801	82'759	82'716	82'673	82'630	82'587	82'544	82'500
'4	83'374	83'333	83'292	83'251	83'210	83'168	83'127	83'085	83'042	83'000
'3	83'863	83'824	83'784	83'744	83'704	83'663	83'623	83'582	83'541	83'500
'2	84'352	84'314	84'275	84'236	84'198	84'158	84'119	84'080	84'040	84'000
'1	84'841	84'804	84'767	84'729	84'691	84'653	84'615	84'577	84'539	84'500
'0	85'330	85'294	85'258	85'222	85'185	85'149	85'112	85'075	85'037	85'000
2'9	85'819	85'784	85'749	85'714	85'679	85'644	85'608	85'572	85'536	85'500
'8	86'308	86'275	86'241	86'207	86'173	86'139	86'104	86'070	86'035	86'000
'7	86'797	86'765	86'732	86'700	86'667	86'634	86'600	86'567	86'534	86'500
'6	87'286	87'255	87'224	87'192	87'161	87'129	87'097	87'065	87'032	87'000
'5	87'775	87'745	87'715	87'685	87'654	87'624	87'593	87'562	87'531	87'500
'4	88'264	88'235	88'206	88'177	88'148	88'119	88'089	88'060	88'030	88'000
'3	88'753	88'725	88'698	88'670	88'642	88'614	88'586	88'557	88'529	88'500
'2	89'242	89'216	89'189	89'163	89'136	89'109	89'082	89'055	89'027	89'000
'1	89'731	89'706	89'681	89'655	89'630	89'604	89'578	89'552	89'526	89'500
'0	90'220	90'196	90'172	90'148	90'123	90'099	90'074	90'050	90'025	90'000
1'9	90'709	90'686	90'663	90'640	90'617	90'594	90'571	90'547	90'524	90'500
'8	91'198	91'176	91'155	91'133	91'111	91'089	91'067	91'045	91'022	91'000
'7	91'687	91'667	91'646	91'626	91'605	91'584	91'563	91'542	91'521	91'500
'6	92'176	92'157	92'138	92'118	92'099	92'079	92'060	92'040	92'020	92'000
'5	92'665	92'647	92'629	92'611	92'593	92'574	92'556	92'537	92'519	92'500
'4	93'154	93'137	93'120	93'103	93'086	93'069	93'052	93'035	93'017	93'000
'3	93'643	93'627	93'612	93'596	93'580	93'564	93'548	93'532	93'516	93'500
'2	94'132	94'118	94'103	94'089	94'074	94'059	94'045	94'030	94'015	94'000
'1	94'621	94'608	94'595	94'581	94'568	94'554	94'541	94'527	94'514	94'500
'0	95'110	95'098	95'086	95'074	95'062	95'050	95'037	95'025	95'012	95'000
'01	·049	·049	·049	·049	·049	·050	·050	·050	·050	·050
'02	·098	·098	·098	·099	·099	·099	·099	·100	·100	·100
'03	·147	·147	·147	·148	·148	·149	·149	·149	·150	·150
'04	·196	·196	·197	·197	·198	·198	·199	·199	·200	·200
'05	·244	·245	·246	·246	·247	·248	·248	·249	·249	·250
'06	·293	·294	·295	·296	·296	·297	·298	·299	·299	·300
'07	·342	·343	·344	·345	·346	·347	·347	·348	·349	·350
'08	·391	·392	·393	·394	·395	·396	·397	·398	·399	·400
'09	·440	·441	·442	·443	·444	·446	·447	·448	·449	·450

$1+a_x$ 

19	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1+a_{x+n}$										
19'9	.251	.000	.000	.000	.000	.000	.000	.000	.000	.000
'8	.752	.503	.252	.000	.000	.000	.000	.000	.000	.000
'7	1.253	1.005	.756	.505	.253	.000	.000	.000	.000	.000
'6	1.754	1.508	1.259	1.010	.759	.508	.254	.000	.000	.000
'5	2.256	2.010	1.763	1.515	1.266	1.015	.763	.510	.256	.000
'4	2.757	2.513	2.267	2.020	1.772	1.523	1.272	1.020	.767	.513
'3	3.258	3.015	2.771	2.525	2.278	2.030	1.781	1.531	1.279	1.026
'2	3.759	3.518	3.275	3.030	2.785	2.538	2.290	2.041	1.790	1.538
'1	4.261	4.020	3.778	3.535	3.291	3.046	2.799	2.551	2.302	2.051
'0	4.762	4.523	4.282	4.040	3.797	3.553	3.308	3.061	2.813	2.564
18'9	5.263	5.025	4.786	4.545	4.304	4.061	3.817	3.571	3.325	3.077
'8	5.764	5.528	5.290	5.051	4.810	4.569	4.326	4.082	3.836	3.590
'7	6.266	6.030	5.793	5.556	5.316	5.076	4.835	4.592	4.348	4.103
'6	6.767	6.533	6.297	6.061	5.823	5.584	5.344	5.102	4.859	4.615
'5	7.268	7.035	6.801	6.566	6.329	6.091	5.852	5.612	5.371	5.128
'4	7.769	7.538	7.305	7.071	6.835	6.599	6.361	6.122	5.882	5.641
'3	8.271	8.040	7.809	7.576	7.342	7.107	6.870	6.633	6.394	6.154
'2	8.772	8.543	8.312	8.081	7.848	7.614	7.379	7.143	6.905	6.667
'1	9.273	9.045	8.816	8.586	8.354	8.122	7.888	7.653	7.417	7.179
'0	9.774	9.548	9.320	9.091	8.861	8.629	8.397	8.163	7.928	7.692
17'9	10.276	10.050	9.824	9.596	9.367	9.137	8.906	8.673	8.440	8.205
'8	10.777	10.553	10.327	10.101	9.873	9.645	9.415	9.184	8.951	8.718
'7	11.278	11.055	10.831	10.606	10.380	10.152	9.924	9.694	9.463	9.231
'6	11.779	11.558	11.335	11.111	10.886	10.660	10.433	10.204	9.974	9.744
'5	12.281	12.060	11.839	11.616	11.392	11.168	10.941	10.714	10.486	10.256
'4	12.782	12.563	12.343	12.121	11.899	11.675	11.450	11.224	10.997	10.769
'3	13.283	13.065	12.846	12.626	12.405	12.183	11.959	11.735	11.509	11.282
'2	13.784	13.568	13.350	13.131	12.911	12.690	12.468	12.245	12.020	11.795
'1	14.286	14.070	13.854	13.636	13.418	13.198	12.977	12.755	12.532	12.308
'0	14.787	14.573	14.358	14.141	13.924	13.706	13.486	13.265	13.043	12.821
16'9	15.288	15.075	14.861	14.646	14.430	14.213	13.995	13.776	13.555	13.333
'8	15.789	15.578	15.365	15.152	14.937	14.721	14.504	14.286	14.066	13.846
'7	16.291	16.080	15.869	15.657	15.443	15.228	15.013	14.796	14.578	14.359
'6	16.792	16.583	16.373	16.162	15.949	15.736	15.522	15.306	15.090	14.872
'5	17.293	17.085	16.877	16.667	16.456	16.244	16.031	15.816	15.601	15.385
'4	17.794	17.588	17.380	17.172	16.962	16.751	16.539	16.327	16.113	15.897
'3	18.296	18.090	17.884	17.677	17.468	17.259	17.048	16.837	16.624	16.410
'2	18.797	18.593	18.388	18.182	17.975	17.766	17.557	17.347	17.136	16.923
'1	19.298	19.095	18.892	18.687	18.481	18.274	18.066	17.857	17.647	17.436
'0	19.799	19.598	19.395	19.192	18.987	18.782	18.575	18.367	18.159	17.949
15'9	20.301	20.101	19.899	19.697	19.494	19.289	19.084	18.878	18.670	18.462
'8	20.802	20.603	20.403	20.202	20.000	19.797	19.593	19.388	19.182	18.974
'7	21.303	21.106	20.907	20.707	20.506	20.305	20.102	19.898	19.693	19.487
'6	21.805	21.608	21.411	21.212	21.013	20.812	20.611	20.408	20.205	20.000
'5	22.306	22.111	21.914	21.717	21.519	21.320	21.120	20.918	20.716	20.513
'4	22.807	22.613	22.418	22.222	22.025	21.827	21.629	21.429	21.228	21.026
'3	23.308	23.116	22.922	22.727	22.532	22.335	22.137	21.939	21.739	21.538
'2	23.810	23.618	23.426	23.232	23.038	22.843	22.646	22.449	22.251	22.051
'1	24.311	24.121	23.929	23.737	23.544	23.350	23.155	22.959	22.762	22.564
'0	24.812	24.623	24.433	24.242	24.051	23.858	23.664	23.469	23.274	23.077



$1 + \alpha_x$ 

19	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + \alpha_{x+n}$										
14 <sup>9</sup>	25'313	25'126	24'937	24'747	24'557	24'365	24'173	23'980	23'785	23'590
'8	25'815	25'628	25'441	25'253	25'063	24'873	24'682	24'490	24'297	24'103
'7	26'316	26'131	25'945	25'758	25'570	25'381	25'191	25'000	24'808	24'615
'6	26'817	26'633	26'448	26'263	26'076	25'888	25'700	25'510	25'320	25'128
'5	27'318	27'136	26'952	26'768	26'582	26'396	26'209	26'020	25'831	25'641
'4	27'820	27'638	27'456	27'273	27'089	26'904	26'718	26'531	26'343	26'154
'3	28'321	28'141	27'960	27'778	27'595	27'411	27'226	27'041	26'854	26'667
'2	28'822	28'643	28'463	28'283	28'101	27'919	27'735	27'551	27'366	27'179
'1	29'323	29'146	28'967	28'788	28'608	28'426	28'244	28'061	27'877	27'692
'0	29'825	29'648	29'471	29'293	29'114	28'934	28'753	28'571	28'389	28'205
13 <sup>9</sup>	30'326	30'151	29'975	29'798	29'620	29'442	29'262	29'082	28'900	28'718
'8	30'827	30'653	30'479	30'303	30'127	29'949	29'771	29'592	29'412	29'231
'7	31'328	31'156	30'982	30'808	30'633	30'457	30'280	30'102	29'923	29'744
'6	31'830	31'658	31'486	31'313	31'139	30'964	30'789	30'612	30'435	30'256
'5	32'331	32'161	31'990	31'818	31'646	31'472	31'298	31'122	30'946	30'769
'4	32'832	32'663	32'494	32'323	32'152	31'980	31'807	31'633	31'458	31'282
'3	33'333	33'166	32'997	32'828	32'658	32'487	32'316	32'143	31'969	31'795
'2	33'835	33'668	33'501	33'333	33'165	32'995	32'824	32'653	32'481	32'308
'1	34'336	34'171	34'005	33'838	33'671	33'503	33'333	33'163	32'992	32'821
'0	34'837	34'673	34'509	34'343	34'177	34'010	33'842	33'673	33'504	33'333
12 <sup>9</sup>	35'338	35'176	35'013	34'848	34'684	34'518	34'351	34'184	34'015	33'846
'8	35'840	35'678	35'516	35'354	35'190	35'025	34'860	34'694	34'527	34'359
'7	36'341	36'181	36'020	35'859	35'696	35'533	35'369	35'204	35'038	34'872
'6	36'842	36'683	36'524	36'364	36'203	36'041	35'878	35'714	35'550	35'385
'5	37'343	37'186	37'028	36'869	36'709	36'548	36'387	36'224	36'061	35'897
'4	37'845	37'688	37'531	37'374	37'215	37'056	36'896	36'735	36'573	36'410
'3	38'346	38'191	38'035	37'879	37'722	37'563	37'405	37'245	37'084	36'923
'2	38'847	38'693	38'539	38'384	38'228	38'071	37'913	37'755	37'596	37'436
'1	39'348	39'196	39'043	38'889	38'734	38'579	38'422	38'265	38'107	37'949
'0	39'850	39'698	39'547	39'394	39'241	39'086	38'931	38'776	38'619	38'462
11 <sup>9</sup>	40'351	40'201	40'050	39'899	39'747	39'594	39'440	39'286	39'130	38'974
'8	40'852	40'704	40'554	40'404	40'253	40'102	39'949	39'796	39'642	39'487
'7	41'353	41'206	41'058	40'909	40'759	40'609	40'458	40'306	40'153	40'000
'6	41'855	41'709	41'562	41'414	41'266	41'117	40'967	40'816	40'665	40'513
'5	42'356	42'211	42'065	41'919	41'772	41'624	41'476	41'327	41'176	41'026
'4	42'857	42'714	42'569	42'424	42'278	42'132	41'985	41'837	41'688	41'538
'3	43'358	43'216	43'073	42'929	42'785	42'640	42'494	42'347	42'199	42'051
'2	43'860	43'719	43'577	43'434	43'291	43'147	43'003	42'857	42'711	42'564
'1	44'361	44'221	44'081	43'939	43'797	43'655	43'511	43'367	43'223	43'077
'0	44'862	44'724	44'584	44'444	44'304	44'162	44'020	43'878	43'734	43'590
'01	·050	·050	·050	·051	·051	·051	·051	·051	·051	·051
'02	·100	·101	·101	·101	·101	·102	·102	·102	·102	·103
'03	·150	·151	·151	·152	·152	·152	·153	·153	·153	·154
'04	·201	·201	·202	·202	·203	·203	·204	·204	·205	·205
'05	·251	·251	·252	·253	·253	·254	·254	·255	·256	·256
'06	·301	·302	·302	·303	·304	·305	·305	·306	·307	·308
'07	·351	·352	·353	·354	·354	·355	·356	·357	·358	·359
'08	·401	·402	·403	·404	·405	·406	·407	·408	·409	·410
'09	·451	·452	·453	·455	·456	·457	·458	·459	·460	·462



$1 + a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
10'9	45'363	45'226	45'088	44'949	44'810	44'670	44'529	44'388	44'246	44'103
'8	45'865	45'729	45'592	45'455	45'316	45'178	45'038	44'898	44'757	44'615
'7	46'366	46'231	46'096	45'960	45'823	45'685	45'547	45'408	45'269	45'128
'6	46'867	46'734	46'599	46'465	46'329	46'193	46'056	45'918	45'780	45'641
'5	47'368	47'236	47'103	46'970	46'835	46'701	46'565	46'429	46'292	46'154
'4	47'870	47'739	47'607	47'475	47'342	47'208	47'074	46'939	46'803	46'667
'3	48'371	48'241	48'111	47'980	47'848	47'716	47'583	47'449	47'315	47'179
'2	48'872	48'744	48'615	48'485	48'354	48'223	48'092	47'959	47'826	47'692
'1	49'373	49'246	49'118	48'990	48'861	48'731	48'601	48'469	48'338	48'205
'0	49'875	49'749	49'622	49'495	49'367	49'239	49'109	48'980	48'849	48'718
9'9	50'376	50'251	50'126	50'000	49'873	49'746	49'618	49'490	49'361	49'231
'8	50'877	50'754	50'630	50'505	50'380	50'254	50'127	50'000	49'872	49'744
'7	51'378	51'256	51'133	51'010	50'886	50'761	50'636	50'510	50'384	50'256
'6	51'880	51'759	51'637	51'515	51'392	51'269	51'145	51'020	50'895	50'769
'5	52'381	52'261	52'141	52'020	51'899	51'777	51'654	51'531	51'407	51'282
'4	52'882	52'764	52'645	52'525	52'405	52'284	52'163	52'041	51'918	51'795
'3	53'383	53'266	53'149	53'030	52'911	52'792	52'672	52'551	52'430	52'308
'2	53'885	53'769	53'652	53'535	53'418	53'299	53'181	53'061	52'941	52'821
'1	54'386	54'271	54'156	54'040	53'924	53'807	53'690	53'571	53'453	53'333
'0	54'887	54'774	54'660	54'545	54'430	54'315	54'198	54'082	53'964	53'846
8'9	55'388	55'276	55'164	55'051	54'937	54'822	54'707	54'592	54'476	54'359
'8	55'890	55'779	55'668	55'556	55'443	55'330	55'216	55'102	54'987	54'872
'7	56'391	56'281	56'171	56'061	55'949	55'838	55'725	55'612	55'499	55'385
'6	56'892	56'784	56'675	56'566	56'456	56'345	56'234	56'122	56'010	55'897
'5	57'393	57'286	57'179	57'071	56'962	56'853	56'743	56'633	56'522	56'410
'4	57'895	57'789	57'683	57'576	57'468	57'360	57'252	57'143	57'033	56'923
'3	58'396	58'291	58'186	58'081	57'975	57'868	57'761	57'653	57'545	57'436
'2	58'897	58'794	58'690	58'586	58'481	58'376	58'270	58'163	58'056	57'949
'1	59'398	59'296	59'194	59'091	58'987	58'883	58'779	58'673	58'568	58'462
'0	59'900	59'799	59'698	59'596	59'494	59'391	59'288	59'184	59'079	58'974
7'9	60'401	60'302	60'202	60'101	60'000	59'898	59'796	59'694	59'591	59'487
'8	60'902	60'804	60'705	60'606	60'506	60'406	60'305	60'204	60'102	60'000
'7	61'404	61'307	61'209	61'111	61'013	60'914	60'814	60'714	60'614	60'513
'6	61'905	61'809	61'713	61'616	61'519	61'421	61'323	61'224	61'125	61'026
'5	62'406	62'312	62'217	62'121	62'025	61'929	61'832	61'735	61'637	61'538
'4	62'907	62'814	62'720	62'626	62'532	62'437	62'341	62'245	62'148	62'051
'3	63'409	63'317	63'224	63'131	63'038	62'944	62'850	62'755	62'660	62'564
'2	63'910	63'819	63'728	63'636	63'544	63'452	63'359	63'265	63'171	63'077
'1	64'411	64'322	64'232	64'141	64'051	63'959	63'868	63'776	63'683	63'590
'0	64'912	64'824	64'736	64'646	64'557	64'467	64'377	64'286	64'194	64'103
6'9	65'414	65'327	65'239	65'152	65'063	64'975	64'886	64'796	64'706	64'615
'8	65'915	65'829	65'743	65'657	65'570	65'482	65'394	65'306	65'217	65'128
'7	66'416	66'332	66'247	66'162	66'076	65'990	65'903	65'816	65'729	65'641
'6	66'917	66'834	66'751	66'667	66'582	66'497	66'412	66'327	66'240	66'154
'5	67'419	67'337	67'254	67'172	67'089	67'005	66'921	66'837	66'752	66'667
'4	67'920	67'839	67'758	67'677	67'595	67'513	67'430	67'347	67'263	67'179
'3	68'421	68'342	68'262	68'182	68'101	68'020	67'939	67'857	67'775	67'692
'2	68'922	68'844	68'766	68'687	68'608	68'528	68'448	68'367	68'286	68'205
'1	69'424	69'347	69'270	69'192	69'114	69'036	68'957	68'878	68'798	68'718
'0	69'925	69'849	69'773	69'697	69'620	69'543	69'466	69'388	69'309	69'231

$1 + a_x$ 

19	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{z+n}$										
5'9	70'426	70'352	70'277	70'202	70'127	70'051	69'975	69'898	69'821	69'744
'8	70'927	70'854	70'781	70'707	70'633	70'558	70'483	70'408	70'332	70'256
'7	71'429	71'357	71'285	71'212	71'139	71'066	70'992	70'918	70'844	70'769
'6	71'930	71'859	71'788	71'717	71'646	71'574	71'501	71'429	71'356	71'282
'5	72'431	72'362	72'292	72'222	72'152	72'081	72'010	71'939	71'867	71'795
'4	72'932	72'864	72'796	72'727	72'658	72'589	72'519	72'449	72'379	72'308
'3	73'434	73'367	73'300	73'232	73'165	73'096	73'028	72'959	72'890	72'821
'2	73'935	73'869	73'804	73'737	73'671	73'604	73'537	73'469	73'402	73'333
'1	74'436	74'372	74'307	74'242	74'177	74'112	74'046	73'980	73'913	73'846
'0	74'937	74'874	74'811	74'747	74'684	74'619	74'555	74'490	74'425	74'359
4'9	75'439	75'377	75'315	75'253	75'190	75'127	75'064	75'000	74'936	74'872
'8	75'940	75'879	75'819	75'758	75'696	75'635	75'573	75'510	75'448	75'385
'7	76'441	76'382	76'322	76'263	76'203	76'142	76'081	76'020	75'959	75'897
'6	76'942	76'884	76'826	76'768	76'709	76'650	76'590	76'531	76'471	76'410
'5	77'444	77'387	77'330	77'273	77'215	77'157	77'099	77'041	76'982	76'923
'4	77'945	77'889	77'834	77'778	77'722	77'665	77'608	77'551	77'494	77'436
'3	78'446	78'392	78'338	78'283	78'228	78'173	78'117	78'061	78'005	77'949
'2	78'947	78'894	78'841	78'788	78'734	78'680	78'626	78'571	78'517	78'462
'1	79'449	79'397	79'345	79'293	79'241	79'188	79'135	79'082	79'028	78'974
'0	79'950	79'900	79'849	79'798	79'747	79'695	79'644	79'592	79'540	79'487
3'9	80'451	80'402	80'353	80'303	80'253	80'203	80'153	80'102	80'051	80'000
'8	80'952	80'905	80'856	80'808	80'759	80'711	80'662	80'612	80'563	80'513
'7	81'454	81'407	81'360	81'313	81'266	81'218	81'170	81'122	81'074	81'026
'6	81'955	81'910	81'864	81'818	81'772	81'726	81'679	81'633	81'586	81'538
'5	82'456	82'412	82'368	82'323	82'278	82'234	82'188	82'143	82'097	82'051
'4	82'957	82'915	82'872	82'828	82'785	82'741	82'697	82'653	82'609	82'564
'3	83'459	83'417	83'375	83'333	83'291	83'249	83'206	83'163	83'120	83'077
'2	83'960	83'920	83'879	83'838	83'797	83'756	83'715	83'673	83'632	83'590
'1	84'461	84'422	84'383	84'343	84'304	84'264	84'224	84'184	84'143	84'103
'0	84'962	84'925	84'887	84'848	84'810	84'772	84'733	84'694	84'655	84'615
2'9	85'464	85'427	85'390	85'354	85'316	85'279	85'242	85'204	85'166	85'128
'8	85'965	85'930	85'894	85'859	85'823	85'787	85'751	85'714	85'678	85'641
'7	86'466	86'432	86'398	86'364	86'329	86'294	86'260	86'224	86'189	86'154
'6	86'967	86'935	86'902	86'869	86'835	86'802	86'768	86'735	86'701	86'667
'5	87'469	87'437	87'406	87'374	87'342	87'310	87'277	87'245	87'212	87'179
'4	87'970	87'940	87'909	87'879	87'848	87'817	87'786	87'755	87'724	87'692
'3	88'471	88'442	88'413	88'384	88'354	88'325	88'295	88'265	88'235	88'205
'2	88'972	88'945	88'917	88'889	88'861	88'832	88'804	88'776	88'747	88'718
'1	89'474	89'447	89'421	89'394	89'367	89'340	89'313	89'286	89'258	89'231
'0	89'975	89'950	89'924	89'899	89'873	89'848	89'822	89'796	89'770	89'744
'01	'050	'050	'050	'051	'051	'051	'051	'051	'051	'051
'02	'100	'101	'101	'101	'101	'102	'102	'102	'102	'103
'03	'150	'151	'151	'152	'152	'152	'153	'153	'153	'154
'04	'201	'201	'202	'202	'203	'203	'204	'204	'205	'205
'05	'251	'251	'252	'253	'253	'254	'254	'255	'256	'256
'06	'301	'302	'302	'303	'304	'305	'305	'306	'307	'308
'07	'351	'352	'353	'354	'354	'355	'356	'357	'358	'359
'08	'401	'402	'403	'404	'405	'406	'407	'408	'409	'410
'09	'451	'452	'453	'455	'456	'457	'458	'459	'460	'462

$1 + a_x$ 

19	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{r+n}$										
19	90'476	90'452	90'428	90'404	90'380	90'355	90'331	90'306	90'281	90'256
8	90'977	90'955	90'932	90'909	90'886	90'863	90'840	90'816	90'793	90'769
7	91'479	91'457	91'436	91'414	91'392	91'371	91'349	91'327	91'304	91'282
6	91'980	91'960	91'940	91'919	91'899	91'878	91'858	91'837	91'816	91'795
5	92'481	92'462	92'443	92'424	92'405	92'386	92'366	92'347	92'327	92'308
4	92'982	92'965	92'947	92'929	92'911	92'893	92'875	92'857	92'839	92'821
3	93'484	93'467	93'451	93'434	93'418	93'401	93'384	93'367	93'350	93'333
2	93'985	93'970	93'955	93'939	93'924	93'909	93'893	93'878	93'862	93'846
1	94'486	94'472	94'458	94'444	94'430	94'416	94'402	94'388	94'373	94'359
0	94'987	94'975	94'962	94'949	94'937	94'924	94'911	94'898	94'885	94'872
.01	.050	.050	.050	.051	.051	.051	.051	.051	.051	.051
.02	.100	.101	.101	.101	.101	.102	.102	.102	.102	.103
.03	.150	.151	.151	.152	.152	.152	.153	.153	.153	.154
.04	.201	.201	.202	.202	.203	.203	.204	.204	.205	.205
.05	.251	.251	.252	.253	.253	.254	.254	.255	.256	.256
.06	.301	.302	.302	.303	.304	.305	.305	.306	.307	.308
.07	.351	.352	.353	.354	.354	.355	.356	.357	.358	.359
.08	.401	.402	.403	.404	.405	.406	.407	.408	.409	.410
.09	.451	.452	.453	.455	.456	.457	.458	.459	.460	.462

19	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
19'4	.257	.000	.000	.000	.000	.000	.000	.000	.000	.000
3	.771	.515	.258	.000	.000	.000	.000	.000	.000	.000
2	1'285	1'031	.775	.518	.260	.000	.000	.000	.000	.000
1	1'799	1'546	1'292	1'036	.779	.521	.261	.000	.000	.000
0	2'314	2'062	1'809	1'554	1'299	1'042	.783	.524	.262	.000
18'9	2'828	2'577	2'326	2'073	1'818	1'562	1'305	1'047	.787	.526
8	3'342	3'093	2'842	2'591	2'338	2'083	1'828	1'571	1'312	1'053
7	3'856	3'608	3'359	3'109	2'857	2'604	2'350	2'094	1'837	1'579
6	4'370	4'124	3'876	3'627	3'377	3'125	2'872	2'618	2'362	2'105
5	4'884	4'639	4'393	4'145	3'896	3'646	3'394	3'141	2'887	2'632
4	5'398	5'155	4'910	4'663	4'416	4'167	3'916	3'665	3'412	3'158
3	5'913	5'670	5'426	5'181	4'935	4'687	4'439	4'188	3'937	3'684
2	6'427	6'186	5'943	5'699	5'455	5'208	4'961	4'712	4'462	4'211
1	6'941	6'701	6'460	6'218	5'974	5'729	5'483	5'236	4'987	4'737
0	7'455	7'216	6'977	6'736	6'494	6'250	6'005	5'759	5'512	5'263
17'9	7'969	7'732	7'494	7'254	7'013	6'771	6'527	6'283	6'037	5'789
8	8'483	8'247	8'010	7'772	7'532	7'292	7'050	6'806	6'562	6'316
7	8'997	8'763	8'527	8'290	8'052	7'812	7'572	7'330	7'087	6'842
6	9'512	9'278	9'044	8'808	8'571	8'333	8'094	7'853	7'612	7'368
5	10'026	9'794	9'561	9'326	9'091	8'854	8'616	8'377	8'136	7'895
4	10'540	10'309	10'078	9'845	9'610	9'375	9'138	8'901	8'661	8'421
3	11'054	10'825	10'594	10'363	10'130	9'896	9'661	9'424	9'186	8'947
2	11'568	11'340	11'111	10'881	10'649	10'417	10'183	9'948	9'711	9'474
1	12'082	11'856	11'628	11'399	11'169	10'937	10'705	10'471	10'236	10'000
0	12'596	12'371	12'145	11'917	11'688	11'458	11'227	10'995	10'761	10'526



$1 + a_x$ 

19	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
16'9	13'111	12'887	12'661	12'435	12'208	11'979	11'749	11'518	11'286	11'053
'8	13'625	13'402	13'178	12'953	12'727	12'500	12'272	12'042	11'811	11'579
'7	14'139	13'918	13'695	13'472	13'247	13'021	12'794	12'565	12'336	12'105
'6	14'653	14'433	14'212	13'990	13'766	13'542	13'316	13'089	12'861	12'632
'5	15'167	14'948	14'729	14'508	14'286	14'062	13'838	13'613	13'386	13'158
'4	15'681	15'464	15'245	15'026	14'805	14'583	14'360	14'136	13'911	13'684
'3	16'195	15'979	15'762	15'544	15'325	15'104	14'883	14'660	14'436	14'211
'2	16'710	16'495	16'279	16'062	15'844	15'625	15'405	15'183	14'961	14'737
'1	17'224	17'010	16'796	16'580	16'364	16'146	15'927	15'707	15'486	15'263
'0	17'738	17'526	17'313	17'098	16'883	16'667	16'449	16'230	16'010	15'789
15'9	18'252	18'041	17'829	17'617	17'403	17'187	16'971	16'754	16'535	16'316
'8	18'766	18'557	18'346	18'135	17'922	17'708	17'493	17'277	17'060	16'842
'7	19'280	19'072	18'863	18'653	18'442	18'229	18'016	17'801	17'585	17'368
'6	19'794	19'588	19'380	19'171	18'961	18'750	18'538	18'325	18'110	17'895
'5	20'308	20'103	19'897	19'689	19'481	19'271	19'060	18'848	18'635	18'421
'4	20'823	20'619	20'413	20'207	20'000	19'792	19'582	19'372	19'160	18'947
'3	21'337	21'134	20'930	20'725	20'519	20'312	20'104	19'895	19'685	19'474
'2	21'851	21'649	21'447	21'244	21'039	20'833	20'627	20'419	20'210	20'000
'1	22'365	22'165	21'964	21'762	21'558	21'354	21'149	20'942	20'735	20'526
'0	22'879	22'680	22'481	22'280	22'078	21'875	21'671	21'466	21'260	21'053
14'9	23'393	23'196	22'997	22'798	22'597	22'396	22'193	21'990	21'785	21'579
'8	23'907	23'711	23'514	23'316	23'117	22'917	22'715	22'513	22'310	22'105
'7	24'422	24'227	24'031	23'834	23'636	23'437	23'238	23'037	22'835	22'632
'6	24'936	24'742	24'548	24'352	24'156	23'958	23'760	23'560	23'360	23'158
'5	25'450	25'258	25'065	24'870	24'675	24'479	24'282	24'084	23'885	23'684
'4	25'964	25'773	25'581	25'389	25'195	25'000	24'804	24'607	24'409	24'211
'3	26'478	26'289	26'098	25'907	25'714	25'521	25'326	25'131	24'934	24'737
'2	26'992	26'804	26'615	26'425	26'234	26'042	25'849	25'654	25'459	25'263
'1	27'506	27'320	27'132	26'943	26'753	26'562	26'371	26'178	25'984	25'789
'0	28'021	27'835	27'649	27'461	27'273	27'083	26'893	26'702	26'509	26'316
13'9	28'535	28'351	28'165	27'979	27'792	27'604	27'415	27'225	27'034	26'842
'8	29'049	28'866	28'682	28'497	28'312	28'125	27'937	27'749	27'559	27'368
'7	29'563	29'381	29'199	29'016	28'831	28'646	28'460	28'272	28'084	27'895
'6	30'077	29'897	29'716	29'534	29'351	29'167	28'982	28'796	28'609	28'421
'5	30'591	30'412	30'233	30'052	29'870	29'687	29'504	29'319	29'134	28'947
'4	31'105	30'928	30'749	30'570	30'390	30'208	30'026	29'843	29'659	29'474
'3	31'620	31'443	31'266	31'088	30'909	30'729	30'548	30'366	30'184	30'000
'2	32'134	31'959	31'783	31'606	31'429	31'250	31'070	30'890	30'709	30'526
'1	32'648	32'474	32'300	32'124	31'948	31'771	31'593	31'414	31'234	31'053
'0	33'162	32'990	32'817	32'642	32'468	32'292	32'115	31'937	31'759	31'579
'01	·051	·052	·052	·052	·052	·052	·052	·052	·052	·053
'02	·103	·103	·103	·104	·104	·104	·104	·105	·105	·105
'03	·154	·155	·155	·155	·156	·156	·157	·157	·157	·158
'04	·206	·206	·207	·207	·208	·208	·209	·209	·210	·211
'05	·257	·258	·258	·259	·260	·260	·261	·262	·262	·263
'06	·308	·309	·310	·311	·312	·312	·313	·314	·315	·316
'07	·360	·361	·362	·363	·364	·365	·366	·366	·367	·368
'08	·411	·412	·413	·415	·416	·417	·418	·419	·420	·421
'09	·463	·464	·465	·466	·468	·469	·470	·471	·472	·474



$1 + a_x$ 

19	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
12'9	33'676	33'505	33'333	33'161	32'987	32'812	32'637	32'461	32'283	32'105
'8	34'190	34'021	33'850	33'679	33'506	33'333	33'159	32'984	32'808	32'632
'7	34'704	34'536	34'367	34'197	34'026	33'854	33'681	33'508	33'333	33'158
'6	35'219	35'052	34'884	34'715	34'545	34'375	34'204	34'031	33'858	33'684
'5	35'733	35'567	35'401	35'233	35'065	34'896	34'726	34'555	34'383	34'211
'4	36'247	36'082	35'917	35'751	35'584	35'417	35'248	35'079	34'908	34'737
'3	36'761	36'598	36'434	36'269	36'104	35'937	35'770	35'602	35'433	35'263
'2	37'275	37'113	36'951	36'788	36'623	36'458	36'292	36'126	35'958	35'789
'1	37'789	37'629	37'468	37'306	37'143	36'979	36'815	36'649	36'483	36'316
'0	38'303	38'144	37'984	37'824	37'662	37'500	37'337	37'173	37'008	36'842
11'9	38'817	38'660	38'501	38'342	38'182	38'021	37'859	37'696	37'533	37'368
'8	39'332	39'175	39'018	38'860	38'701	38'542	38'381	38'220	38'058	37'895
'7	39'846	39'691	39'535	39'378	39'221	39'062	38'903	38'743	38'583	38'421
'6	40'360	40'206	40'052	39'896	39'740	39'583	39'426	39'267	39'108	38'947
'5	40'874	40'722	40'568	40'415	40'260	40'104	39'948	39'791	39'633	39'474
'4	41'388	41'237	41'085	40'933	40'779	40'625	40'470	40'314	40'157	40'000
'3	41'902	41'753	41'602	41'451	41'299	41'146	40'992	40'838	40'682	40'526
'2	42'416	42'268	42'119	41'969	41'818	41'667	41'514	41'361	41'207	41'053
'1	42'931	42'784	42'636	42'487	42'338	42'187	42'037	41'885	41'732	41'579
'0	43'445	43'299	43'152	43'005	42'857	42'708	42'559	42'408	42'257	42'105
10'9	43'959	43'814	43'669	43'523	43'377	43'229	43'081	42'932	42'782	42'632
'8	44'473	44'330	44'186	44'041	43'896	43'750	43'603	43'455	43'307	43'158
'7	44'987	44'845	44'703	44'560	44'416	44'271	44'125	43'979	43'832	43'684
'6	45'501	45'361	45'220	45'078	44'935	44'792	44'648	44'503	44'357	44'211
'5	46'015	45'876	45'736	45'596	45'455	45'312	45'170	45'026	44'882	44'737
'4	46'530	46'392	46'253	46'114	45'974	45'833	45'692	45'550	45'407	45'263
'3	47'044	46'907	46'770	46'632	46'494	46'354	46'214	46'073	45'932	45'789
'2	47'558	47'423	47'287	47'150	47'013	46'875	46'736	46'597	46'457	46'316
'1	48'072	47'938	47'804	47'668	47'532	47'396	47'258	47'120	46'982	46'842
'0	48'586	48'454	48'320	48'187	48'052	47'917	47'781	47'644	47'507	47'368
9'9	49'100	48'969	48'837	48'705	48'571	48'437	48'303	48'168	48'031	47'895
'8	49'614	49'485	49'354	49'223	49'091	48'958	48'825	48'691	48'556	48'421
'7	50'129	50'000	49'871	49'741	49'610	49'479	49'347	49'215	49'081	48'947
'6	50'643	50'515	50'388	50'259	50'130	50'000	49'869	49'738	49'606	49'474
'5	51'157	51'031	50'904	50'777	50'649	50'521	50'392	50'262	50'131	50'000
'4	51'671	51'546	51'421	51'295	51'169	51'042	50'914	50'785	50'656	50'526
'3	52'185	52'062	51'938	51'813	51'688	51'562	51'436	51'309	51'181	51'053
'2	52'699	52'577	52'455	52'332	52'208	52'083	51'958	51'832	51'706	51'579
'1	53'213	53'093	52'972	52'850	52'727	52'604	52'480	52'356	52'231	52'105
'0	53'728	53'608	53'488	53'368	53'247	53'125	53'003	52'880	52'756	52'632
8'9	54'242	54'124	54'005	53'886	53'766	53'646	53'525	53'403	53'281	53'158
'8	54'756	54'639	54'522	54'404	54'286	54'167	54'047	53'927	53'806	53'684
'7	55'270	55'155	55'039	54'922	54'805	54'687	54'569	54'450	54'331	54'211
'6	55'784	55'670	55'556	55'440	55'325	55'208	55'091	54'974	54'856	54'737
'5	56'298	56'186	56'072	55'959	55'844	55'729	55'614	55'497	55'381	55'263
'4	56'812	56'701	56'589	56'477	56'364	56'250	56'136	56'021	55'906	55'789
'3	57'326	57'216	57'106	56'995	56'883	56'771	56'658	56'545	56'430	56'316
'2	57'841	57'732	57'623	57'513	57'403	57'292	57'180	57'068	56'955	56'842
'1	58'355	58'247	58'140	58'031	57'922	57'812	57'702	57'592	57'480	57'368
'0	58'869	58'763	58'656	58'549	58'442	58'333	58'225	58'115	58'005	57'895

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
7'9	59'383	59'278	59'173	59'067	58'961	58'854	58'747	58'639	58'530	58'421
'8	59'897	59'794	59'690	59'585	59'481	59'375	59'269	59'162	59'055	58'947
'7	60'411	60'309	60'207	60'104	60'000	59'896	59'791	59'686	59'580	59'474
'6	60'925	60'825	60'724	60'622	60'519	60'417	60'313	60'209	60'104	60'000
'5	61'440	61'340	61'240	61'140	61'039	60'937	60'836	60'733	60'630	60'526
'4	61'954	61'856	61'757	61'658	61'558	61'458	61'358	61'257	61'155	61'053
'3	62'468	62'371	62'274	62'176	62'078	61'979	61'880	61'780	61'680	61'579
'2	62'982	62'887	62'791	62'694	62'597	62'500	62'402	62'304	62'205	62'105
'1	63'496	63'402	63'307	63'212	63'117	63'021	62'924	62'827	62'730	62'632
'0	64'010	63'918	63'824	63'731	63'636	63'542	63'446	63'351	63'255	63'158
6'9	64'524	64'433	64'341	64'249	64'156	64'062	63'969	63'874	63'780	63'684
'8	65'039	64'948	64'858	64'767	64'675	64'583	64'491	64'398	64'304	64'211
'7	65'553	65'464	65'375	65'285	65'195	65'104	65'013	64'921	64'829	64'737
'6	66'067	65'979	65'891	65'803	65'714	65'625	65'535	65'445	65'354	65'263
'5	66'581	66'495	66'408	66'321	66'234	66'146	66'057	65'969	65'879	65'789
'4	67'095	67'010	66'925	66'839	66'753	66'667	66'580	66'492	66'404	66'316
'3	67'609	67'526	67'442	67'358	67'273	67'187	67'102	67'016	66'929	66'842
'2	68'123	68'041	67'959	67'876	67'792	67'708	67'624	67'539	67'454	67'368
'1	68'638	68'557	68'475	68'394	68'312	68'229	68'146	68'063	67'979	67'895
'0	69'152	69'072	68'992	68'912	68'831	68'750	68'668	68'586	68'504	68'421
5'9	69'666	69'588	69'509	69'430	69'351	69'271	69'191	69'110	69'029	68'947
'8	70'180	70'103	70'026	69'948	69'870	69'792	69'713	69'634	69'554	69'474
'7	70'694	70'619	70'543	70'466	70'390	70'312	70'235	70'157	70'079	70'000
'6	71'208	71'134	71'059	70'984	70'909	70'833	70'757	70'681	70'604	70'526
'5	71'722	71'649	71'576	71'503	71'429	71'354	71'279	71'204	71'129	71'053
'4	72'237	72'165	72'093	72'021	71'948	71'875	71'802	71'728	71'654	71'579
'3	72'751	72'680	72'610	72'539	72'468	72'396	72'324	72'251	72'178	72'105
'2	73'265	73'196	73'127	73'057	72'987	72'917	72'846	72'775	72'703	72'632
'1	73'779	73'711	73'643	73'575	73'506	73'437	73'368	73'298	73'228	73'158
'0	74'293	74'227	74'160	74'093	74'026	73'958	73'890	73'822	73'753	73'684
4'9	74'807	74'742	74'677	74'611	74'545	74'479	74'413	74'346	74'278	74'211
'8	75'321	75'258	75'194	75'130	75'065	75'000	74'935	74'869	74'803	74'737
'7	75'835	75'773	75'711	75'648	75'584	75'521	75'457	75'393	75'328	75'263
'6	76'350	76'289	76'227	76'166	76'104	76'042	75'979	75'916	75'853	75'789
'5	76'864	76'804	76'744	76'684	76'623	76'562	76'501	76'440	76'378	76'316
'4	77'378	77'320	77'261	77'202	77'143	77'083	77'023	76'963	76'903	76'842
'3	77'892	77'835	77'778	77'720	77'662	77'604	77'546	77'487	77'428	77'368
'2	78'406	78'351	78'295	78'238	78'182	78'125	78'068	78'010	77'953	77'895
'1	78'920	78'866	78'811	78'756	78'701	78'646	78'590	78'534	78'478	78'421
'0	79'434	79'381	79'328	79'275	79'221	79'167	79'112	79'058	79'003	78'947
'01	·051	·052	·052	·052	·052	·052	·052	·052	·052	·053
'02	·103	·103	·103	·101	·101	·101	·101	·105	·105	·105
'03	·154	·155	·155	·155	·156	·156	·157	·157	·157	·158
'04	·206	·206	·207	·207	·208	·208	·209	·209	·210	·211
'05	·257	·258	·258	·259	·260	·260	·261	·262	·262	·263
'06	·308	·309	·310	·311	·312	·312	·313	·314	·315	·316
'07	·360	·361	·362	·363	·364	·365	·366	·366	·367	·368
'08	·411	·412	·413	·415	·416	·417	·418	·419	·420	·421
'09	·463	·461	·465	·466	·468	·469	·470	·471	·472	·474

$1 + a_x$

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
3'9	79'949	79'897	79'845	79'793	79'740	79'687	79'634	79'581	79'528	79'474
8	80'463	80'412	80'362	80'311	80'260	80'208	80'157	80'105	80'052	80'000
7	80'977	80'928	80'879	80'829	80'779	80'729	80'679	80'628	80'577	80'526
6	81'491	81'443	81'395	81'347	81'299	81'250	81'201	81'152	81'102	81'053
5	82'005	81'959	81'912	81'865	81'818	81'771	81'723	81'675	81'627	81'579
4	82'519	82'474	82'429	82'383	82'338	82'292	82'245	82'199	82'152	82'105
3	83'033	82'990	82'946	82'902	82'857	82'812	82'768	82'723	82'677	82'632
2	83'548	83'505	83'463	83'420	83'377	83'333	83'290	83'246	83'202	83'158
1	84'062	84'021	83'979	83'938	83'896	83'854	83'812	83'770	83'727	83'684
0	84'576	84'536	84'496	84'456	84'416	84'375	84'334	84'293	84'252	84'211
2'9	85'090	85'052	85'013	84'974	84'935	84'896	84'856	84'817	84'777	84'737
8	85'604	85'567	85'530	85'492	85'455	85'417	85'379	85'340	85'302	85'263
7	86'118	86'082	86'047	86'010	85'974	85'937	85'901	85'864	85'827	85'789
6	86'632	86'598	86'563	86'528	86'494	86'458	86'423	86'387	86'352	86'316
5	87'147	87'113	87'080	87'047	87'013	86'979	86'945	86'911	86'877	86'842
4	87'661	87'629	87'597	87'565	87'532	87'500	87'467	87'435	87'402	87'368
3	88'175	88'144	88'114	88'083	88'052	88'021	87'990	87'958	87'927	87'895
2	88'689	88'660	88'630	88'601	88'571	88'542	88'512	88'482	88'451	88'421
1	89'203	89'175	89'147	89'119	89'091	89'062	89'034	89'005	88'976	88'947
0	89'717	89'691	89'664	89'637	89'610	89'583	89'556	89'529	89'501	89'474
1'9	90'231	90'206	90'181	90'155	90'130	90'104	90'078	90'052	90'026	90'000
8	90'745	90'722	90'698	90'674	90'649	90'625	90'601	90'576	90'551	90'526
7	91'260	91'237	91'214	91'192	91'169	91'146	91'123	91'099	91'076	91'053
6	91'774	91'753	91'731	91'710	91'688	91'667	91'645	91'623	91'601	91'579
5	92'288	92'268	92'248	92'228	92'208	92'187	92'167	92'147	92'126	92'105
4	92'802	92'784	92'765	92'746	92'727	92'708	92'689	92'670	92'651	92'632
3	93'316	93'299	93'282	93'264	93'247	93'229	93'211	93'194	93'176	93'158
2	93'830	93'814	93'798	93'782	93'766	93'750	93'734	93'717	93'701	93'684
1	94'344	94'330	94'315	94'301	94'286	94'271	94'256	94'241	94'226	94'211
0	94'859	94'845	94'832	94'819	94'805	94'792	94'778	94'764	94'751	94'737
01	051	052	052	052	052	052	052	052	052	053
02	103	103	103	104	104	104	104	105	105	105
03	154	155	155	155	156	156	157	157	157	158
04	206	206	207	207	208	208	209	209	210	211
05	257	258	258	259	260	260	261	262	262	263
06	308	309	310	311	312	312	313	314	315	316
07	360	361	362	363	364	365	366	366	367	368
08	411	412	413	415	416	417	418	419	420	421
09	463	464	465	466	468	469	470	471	472	474

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
18'9	264	000	000	000	000	000	000	000	000	000
8	792	529	265	000	000	000	000	000	000	000
7	1'319	1'058	796	532	267	000	000	000	000	000
6	1'847	1'587	1'326	1'064	800	535	268	000	000	000
5	2'375	2'116	1'857	1'596	1'333	1'070	804	538	270	000



$$1 + \alpha_x$$

18	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + \alpha_{x+n}$										
18'4	2'902	2'646	2'387	2'128	1'867	1'604	1'340	1'075	'809	'541
'3	3'430	3'175	2'918	2'660	2'400	2'139	1'877	1'613	1'348	1'081
'2	3'958	3'704	3'448	3'191	2'933	2'674	2'413	2'151	1'887	1'622
'1	4'485	4'233	3'979	3'723	3'467	3'209	2'949	2'688	2'426	2'162
'0	5'013	4'762	4'509	4'255	4'000	3'743	3'485	3'226	2'965	2'703
17'9	5'541	5'291	5'040	4'787	4'533	4'278	4'021	3'763	3'504	3'243
'8	6'069	5'820	5'570	5'319	5'067	4'813	4'558	4'301	4'043	3'784
'7	6'596	6'349	6'101	5'851	5'600	5'348	5'094	4'839	4'582	4'324
'6	7'124	6'878	6'631	6'383	6'133	5'882	5'630	5'376	5'121	4'865
'5	7'652	7'407	7'162	6'915	6'667	6'417	6'166	5'914	5'660	5'405
'4	8'179	7'937	7'692	7'447	7'200	6'952	6'702	6'452	6'199	5'946
'3	8'707	8'466	8'223	7'979	7'733	7'487	7'239	6'989	6'739	6'486
'2	9'235	8'995	8'753	8'511	8'267	8'021	7'775	7'527	7'278	7'027
'1	9'763	9'524	9'284	9'043	8'800	8'556	8'311	8'065	7'817	7'568
'0	10'290	10'053	9'814	9'574	9'333	9'091	8'847	8'602	8'356	8'108
16'9	10'818	10'582	10'345	10'106	9'867	9'626	9'383	9'140	8'895	8'649
'8	11'346	11'111	10'875	10'638	10'400	10'160	9'920	9'677	9'434	9'189
'7	11'873	11'640	11'406	11'170	10'933	10'695	10'456	10'215	9'973	9'730
'6	12'401	12'169	11'936	11'702	11'467	11'230	10'992	10'753	10'512	10'270
'5	12'929	12'698	12'467	12'234	12'000	11'765	11'528	11'290	11'051	10'811
'4	13'456	13'228	12'997	12'766	12'533	12'299	12'064	11'828	11'590	11'351
'3	13'984	13'757	13'528	13'298	13'067	12'834	12'601	12'366	12'129	11'892
'2	14'512	14'286	14'058	13'830	13'600	13'369	13'137	12'903	12'668	12'432
'1	15'040	14'815	14'589	14'362	14'133	13'904	13'673	13'441	13'208	12'973
'0	15'567	15'344	15'119	14'894	14'667	14'439	14'209	13'978	13'747	13'514
15'9	16'095	15'873	15'650	15'426	15'200	14'973	14'745	14'516	14'286	14'054
'8	16'623	16'402	16'180	15'957	15'733	15'508	15'282	15'054	14'825	14'595
'7	17'150	16'931	16'711	16'489	16'267	16'043	15'818	15'591	15'364	15'135
'6	17'678	17'460	17'241	17'021	16'800	16'578	16'354	16'129	15'903	15'676
'5	18'206	17'989	17'772	17'553	17'333	17'112	16'890	16'667	16'442	16'216
'4	18'734	18'519	18'302	18'085	17'867	17'647	17'426	17'204	16'981	16'757
'3	19'261	19'048	18'833	18'617	18'400	18'182	17'962	17'742	17'520	17'297
'2	19'789	19'577	19'363	19'149	18'933	18'717	18'499	18'280	18'059	17'838
'1	20'317	20'106	19'894	19'681	19'467	19'251	19'035	18'817	18'598	18'378
'0	20'844	20'635	20'424	20'213	20'000	19'786	19'571	19'355	19'137	18'919
14'9	21'372	21'164	20'955	20'745	20'533	20'321	20'107	19'892	19'677	19'459
'8	21'900	21'693	21'485	21'277	21'067	20'856	20'643	20'430	20'216	20'000
'7	22'427	22'222	22'016	21'809	21'600	21'390	21'180	20'968	20'755	20'541
'6	22'955	22'751	22'546	22'340	22'133	21'925	21'716	21'505	21'294	21'081
'5	23'483	23'280	23'077	22'872	22'667	22'460	22'252	22'043	21'833	21'622
'01	'053	'053	'053	'053	'053	'053	'054	'054	'054	'054
'02	'106	'106	'106	'106	'107	'107	'107	'108	'108	'108
'03	'158	'159	'159	'160	'160	'160	'161	'161	'162	'162
'04	'211	'212	'212	'213	'213	'214	'214	'215	'216	'216
'05	'264	'265	'265	'266	'267	'267	'268	'269	'270	'270
'06	'317	'317	'318	'319	'320	'321	'322	'323	'323	'324
'07	'369	'370	'371	'372	'373	'374	'375	'376	'377	'378
'08	'422	'423	'424	'426	'427	'428	'429	'430	'431	'432
'09	'475	'476	'477	'479	'480	'481	'483	'484	'485	'486



$1 + a_{\dots}$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{\dots}$										
14.4	24'011	23'810	23'607	23'404	23'200	22'995	22'788	22'581	22'372	22'162
'3	24'538	24'339	24'138	23'936	23'733	23'529	23'324	23'118	22'911	22'703
'2	25'066	24'868	24'668	24'468	24'267	24'064	23'861	23'656	23'450	23'243
'1	25'594	25'397	25'199	25'000	24'800	24'599	24'397	24'194	23'989	23'784
'0	26'121	25'926	25'729	25'532	25'333	25'134	24'933	24'731	24'528	24'324
13.9	26'649	26'455	26'260	26'064	25'867	25'668	25'469	25'269	25'067	24'865
'8	27'177	26'984	26'790	26'596	26'400	26'203	26'005	25'806	25'606	25'405
'7	27'704	27'513	27'321	27'128	26'933	26'738	26'542	26'344	26'146	25'946
'6	28'232	28'042	27'851	27'660	27'467	27'273	27'078	26'882	26'685	26'486
'5	28'760	28'571	28'382	28'191	28'000	27'807	27'614	27'419	27'224	27'027
'4	29'288	29'101	28'912	28'723	28'533	28'342	28'150	27'957	27'763	27'568
'3	29'815	29'630	29'443	29'255	29'067	28'877	28'686	28'495	28'302	28'108
'2	30'343	30'159	29'973	29'787	29'600	29'412	29'223	29'032	28'841	28'649
'1	30'871	30'688	30'504	30'319	30'133	29'947	29'759	29'570	29'380	29'189
'0	31'398	31'217	31'034	30'851	30'667	30'481	30'295	30'108	29'919	29'730
12.9	31'926	31'746	31'565	31'383	31'200	31'016	30'831	30'645	30'458	30'270
'8	32'454	32'275	32'095	31'915	31'733	31'551	31'367	31'183	30'997	30'811
'7	32'982	32'804	32'626	32'447	32'267	32'086	31'903	31'720	31'536	31'351
'6	33'509	33'333	33'157	32'979	32'800	32'620	32'440	32'258	32'075	31'892
'5	34'037	33'862	33'687	33'511	33'333	33'155	32'976	32'796	32'615	32'432
'4	34'565	34'392	34'218	34'043	33'867	33'690	33'512	33'333	33'154	32'973
'3	35'092	34'921	34'748	34'574	34'400	34'225	34'048	33'871	33'693	33'514
'2	35'620	35'450	35'279	35'106	34'933	34'759	34'584	34'409	34'232	34'054
'1	36'148	35'979	35'809	35'638	35'467	35'294	35'121	34'946	34'771	34'595
'0	36'675	36'508	36'340	36'170	36'000	35'829	35'657	35'484	35'310	35'135
11.9	37'203	37'037	36'870	36'702	36'533	36'364	36'193	36'022	35'849	35'676
'8	37'731	37'566	37'401	37'234	37'067	36'898	36'729	36'559	36'388	36'216
'7	38'259	38'095	37'931	37'766	37'600	37'433	37'265	37'097	36'927	36'757
'6	38'786	38'624	38'462	38'298	38'133	37'968	37'802	37'634	37'466	37'297
'5	39'314	39'153	38'992	38'830	38'667	38'503	38'338	38'172	38'005	37'838
'4	39'842	39'683	39'523	39'362	39'200	39'037	38'874	38'710	38'544	38'378
'3	40'369	40'212	40'053	39'894	39'733	39'572	39'410	39'247	39'084	38'919
'2	40'897	40'741	40'584	40'426	40'267	40'107	39'946	39'785	39'623	39'459
'1	41'425	41'270	41'114	40'957	40'800	40'642	40'483	40'323	40'162	40'000
'0	41'953	41'799	41'645	41'489	41'333	41'176	41'019	40'860	40'701	40'541
10.9	42'480	42'328	42'175	42'021	41'867	41'711	41'555	41'398	41'240	41'081
'8	43'008	42'857	42'706	42'553	42'400	42'246	42'091	41'935	41'779	41'622
'7	43'536	43'386	43'236	43'085	42'933	42'781	42'627	42'473	42'318	42'162
'6	44'063	43'915	43'767	43'617	43'467	43'316	43'164	43'011	42'857	42'703
'5	44'591	44'444	44'297	44'149	44'000	43'850	43'700	43'548	43'396	43'243
'4	45'119	44'974	44'828	44'681	44'533	44'385	44'236	44'086	43'935	43'784
'3	45'646	45'503	45'358	45'213	45'067	44'920	44'772	44'624	44'474	44'324
'2	46'174	46'032	45'889	45'745	45'600	45'455	45'308	45'161	45'013	44'865
'1	46'702	46'561	46'419	46'277	46'133	45'989	45'845	45'699	45'553	45'405
'0	47'230	47'090	46'950	46'809	46'667	46'524	46'381	46'237	46'092	45'946
9.9	47'757	47'619	47'480	47'340	47'200	47'059	46'917	46'774	46'631	46'486
'8	48'285	48'148	48'011	47'872	47'733	47'594	47'453	47'312	47'170	47'027
'7	48'813	48'677	48'541	48'404	48'267	48'128	47'989	47'849	47'709	47'568
'6	49'340	49'206	49'072	48'936	48'800	48'663	48'525	48'387	48'248	48'108
'5	49'868	49'735	49'602	49'468	49'333	49'198	49'062	48'925	48'787	48'649

$1 + a_x$ 

18	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
9'4	50'396	50'265	50'133	50'000	49'867	49'733	49'598	49'462	49'326	49'189
'3	50'923	50'794	50'663	50'532	50'400	50'267	50'134	50'000	49'865	49'730
'2	51'451	51'323	51'194	51'064	50'933	50'802	50'670	50'538	50'404	50'270
'1	51'979	51'852	51'724	51'596	51'467	51'337	51'206	51'075	50'943	50'811
'0	52'507	52'381	52'255	52'128	52'000	51'872	51'743	51'613	51'482	51'351
8'9	53'034	52'910	52'785	52'660	52'533	52'406	52'279	52'151	52'022	51'892
'8	53'562	53'439	53'316	53'191	53'067	52'941	52'815	52'688	52'561	52'432
'7	54'090	53'968	53'846	53'723	53'600	53'476	53'351	53'226	53'100	52'973
'6	54'617	54'497	54'377	54'255	54'133	54'011	53'887	53'763	53'639	53'514
'5	55'145	55'026	54'907	54'787	54'667	54'545	54'424	54'301	54'178	54'054
'4	55'673	55'556	55'438	55'319	55'200	55'080	54'960	54'839	54'717	54'595
'3	56'201	56'085	55'968	55'851	55'733	55'615	55'496	55'376	55'256	55'135
'2	56'728	56'614	56'499	56'383	56'267	56'150	56'032	55'914	55'795	55'676
'1	57'256	57'143	57'029	56'915	56'800	56'684	56'568	56'452	56'334	56'216
'0	57'784	57'672	57'560	57'447	57'333	57'219	57'105	56'989	56'873	56'757
7'9	58'311	58'201	58'090	57'979	57'867	57'754	57'641	57'527	57'412	57'297
'8	58'839	58'730	58'621	58'511	58'400	58'289	58'177	58'065	57'951	57'838
'7	59'367	59'259	59'151	59'043	58'933	58'824	58'713	58'602	58'491	58'378
'6	59'894	59'788	59'682	59'574	59'467	59'358	59'249	59'140	59'030	58'919
'5	60'422	60'317	60'212	60'106	60'000	59'893	59'786	59'677	59'569	59'459
'4	60'950	60'847	60'743	60'638	60'533	60'428	60'322	60'215	60'108	60'000
'3	61'478	61'376	61'273	61'170	61'067	60'963	60'858	60'753	60'647	60'541
'2	62'005	61'905	61'804	61'702	61'600	61'497	61'394	61'290	61'186	61'081
'1	62'533	62'434	62'334	62'234	62'133	62'032	61'930	61'828	61'725	61'622
'0	63'061	62'963	62'865	62'766	62'667	62'567	62'466	62'366	62'264	62'162
6'9	63'588	63'492	63'395	63'298	63'200	63'102	63'003	62'903	62'803	62'703
'8	64'116	64'021	63'926	63'830	63'733	63'636	63'539	63'441	63'342	63'243
'7	64'644	64'550	64'456	64'362	64'267	64'171	64'075	63'978	63'881	63'784
'6	65'172	65'079	64'987	64'894	64'800	64'706	64'611	64'516	64'420	64'324
'5	65'699	65'608	65'517	65'426	65'333	65'241	65'147	65'054	64'960	64'865
'4	66'227	66'138	66'048	65'957	65'867	65'775	65'684	65'591	65'499	65'405
'3	66'755	66'667	66'578	66'489	66'400	66'310	66'220	66'129	66'038	65'946
'2	67'282	67'196	67'109	67'021	66'933	66'845	66'756	66'667	66'577	66'486
'1	67'810	67'725	67'639	67'553	67'467	67'380	67'292	67'204	67'116	67'027
'0	68'338	68'254	68'170	68'085	68'000	67'914	67'828	67'742	67'655	67'568
5'9	68'865	68'783	68'700	68'617	68'533	68'449	68'365	68'280	68'194	68'108
'8	69'393	69'312	69'231	69'149	69'067	68'984	68'901	68'817	68'733	68'649
'7	69'921	69'841	69'761	69'681	69'600	69'519	69'437	69'355	69'272	69'189
'6	70'449	70'370	70'292	70'213	70'133	70'053	69'973	69'892	69'811	69'730
'5	70'976	70'899	70'822	70'745	70'667	70'588	70'509	70'430	70'350	70'270
'01	·053	·053	·053	·053	·053	·053	·054	·054	·054	·054
'02	·106	·106	·106	·106	·107	·107	·107	·108	·108	·108
'03	·158	·159	·159	·160	·160	·160	·161	·161	·162	·162
'04	·211	·212	·212	·213	·213	·214	·214	·215	·216	·216
'05	·264	·265	·265	·266	·267	·267	·268	·269	·270	·270
'06	·317	·317	·318	·319	·320	·321	·322	·323	·323	·324
'07	·369	·370	·371	·372	·373	·374	·375	·376	·377	·378
'08	·422	·423	·424	·426	·427	·428	·429	·430	·431	·432
'09	·475	·476	·477	·479	·480	·481	·483	·484	·485	·486

18	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
1 + a <sub>x:n</sub>										
5.4	71'504	71'429	71'353	71'277	71'200	71'123	71'046	70'968	70'889	70'811
5.3	72'032	71'958	71'883	71'809	71'733	71'658	71'582	71'505	71'429	71'351
5.2	72'559	72'487	72'414	72'340	72'267	72'193	72'118	72'043	71'968	71'892
5.1	73'087	73'016	72'944	72'872	72'800	72'727	72'654	72'581	72'507	72'432
5.0	73'615	73'545	73'475	73'404	73'333	73'262	73'190	73'118	73'046	72'973
4.9	74'142	74'074	74'005	73'936	73'867	73'797	73'727	73'656	73'585	73'514
4.8	74'670	74'603	74'536	74'468	74'400	74'332	74'263	74'194	74'124	74'054
4.7	75'198	75'132	75'066	75'000	74'933	74'866	74'799	74'731	74'663	74'595
4.6	75'726	75'661	75'597	75'532	75'467	75'401	75'335	75'269	75'202	75'135
4.5	76'253	76'190	76'127	76'064	76'000	75'936	75'871	75'806	75'741	75'676
4.4	76'781	76'720	76'658	76'596	76'533	76'471	76'408	76'344	76'280	76'216
4.3	77'309	77'249	77'188	77'128	77'067	77'005	76'944	76'882	76'819	76'757
4.2	77'836	77'778	77'719	77'660	77'600	77'540	77'480	77'419	77'358	77'297
4.1	78'364	78'307	78'249	78'191	78'133	78'075	78'016	77'957	77'898	77'838
4.0	78'892	78'836	78'780	78'723	78'667	78'610	78'552	78'495	78'437	78'378
3.9	79'420	79'365	79'310	79'255	79'200	79'144	79'088	79'032	78'976	78'919
3.8	79'947	79'894	79'841	79'787	79'733	79'679	79'625	79'570	79'515	79'459
3.7	80'475	80'423	80'371	80'319	80'267	80'214	80'161	80'108	80'054	80'000
3.6	81'003	80'952	80'902	80'851	80'800	80'749	80'697	80'645	80'593	80'541
3.5	81'530	81'481	81'432	81'383	81'333	81'283	81'233	81'183	81'132	81'081
3.4	82'058	82'011	81'963	81'915	81'867	81'818	81'769	81'720	81'671	81'622
3.3	82'586	82'540	82'493	82'447	82'400	82'353	82'306	82'258	82'210	82'162
3.2	83'113	83'069	83'024	82'979	82'933	82'888	82'842	82'796	82'749	82'703
3.1	83'641	83'598	83'554	83'511	83'467	83'422	83'378	83'333	83'288	83'243
3.0	84'169	84'127	84'085	84'043	84'000	83'957	83'914	83'871	83'827	83'784
2.9	84'697	84'656	84'615	84'574	84'533	84'492	84'450	84'409	84'367	84'324
2.8	85'224	85'185	85'146	85'106	85'067	85'027	84'987	84'946	84'906	84'865
2.7	85'752	85'714	85'676	85'638	85'600	85'562	85'523	85'484	85'445	85'405
2.6	86'280	86'243	86'207	86'170	86'133	86'096	86'059	86'022	85'984	85'946
2.5	86'807	86'772	86'737	86'702	86'667	86'631	86'595	86'559	86'523	86'486
2.4	87'335	87'302	87'268	87'234	87'200	87'166	87'131	87'097	87'062	87'027
2.3	87'863	87'831	87'798	87'766	87'733	87'701	87'668	87'634	87'601	87'568
2.2	88'391	88'360	88'329	88'298	88'267	88'235	88'204	88'172	88'140	88'108
2.1	88'918	88'889	88'859	88'830	88'800	88'770	88'740	88'710	88'679	88'649
2.0	89'446	89'418	89'390	89'362	89'333	89'305	89'276	89'247	89'218	89'189
1.9	89'974	89'947	89'920	89'894	89'867	89'840	89'812	89'785	89'757	89'730
1.8	90'501	90'476	90'451	90'426	90'400	90'374	90'349	90'323	90'297	90'270
1.7	91'029	91'005	90'981	90'957	90'933	90'909	90'885	90'860	90'836	90'811
1.6	91'557	91'534	91'512	91'489	91'467	91'444	91'421	91'398	91'375	91'351
1.5	92'084	92'063	92'042	92'021	92'000	91'979	91'957	91'935	91'914	91'892
1.4	92'612	92'593	92'573	92'553	92'533	92'513	92'493	92'473	92'453	92'432
1.3	93'140	93'122	93'103	93'085	93'067	93'048	93'029	93'011	92'992	92'973
1.2	93'668	93'651	93'634	93'617	93'600	93'583	93'566	93'548	93'531	93'514
1.1	94'195	94'180	94'164	94'149	94'133	94'118	94'102	94'086	94'070	94'054
1.0	94'723	94'709	94'695	94'681	94'667	94'652	94'638	94'624	94'609	94'595



$$1 + a_x$$

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
.01	.053	.053	.053	.053	.053	.053	.054	.054	.054	.054
.02	.106	.106	.106	.106	.107	.107	.107	.108	.108	.108
.03	.158	.159	.159	.160	.160	.160	.161	.161	.162	.162
.04	.211	.212	.212	.213	.213	.214	.214	.215	.216	.216
.05	.264	.265	.265	.266	.267	.267	.268	.269	.270	.270
.06	.317	.317	.318	.319	.320	.321	.322	.323	.323	.324
.07	.369	.370	.371	.372	.373	.374	.375	.376	.377	.378
.08	.422	.423	.424	.426	.427	.428	.429	.430	.431	.432
.09	.475	.476	.477	.479	.480	.481	.483	.484	.485	.486

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
18.4	.271	.000	.000	.000	.000	.000	.000	.000	.000	.000
.3	.813	.543	.272	.000	.000	.000	.000	.000	.000	.000
.2	1.355	1.087	.817	.546	.274	.000	.000	.000	.000	.000
.1	1.897	1.630	1.362	1.093	.822	.549	.275	.000	.000	.000
.0	2.439	2.174	1.907	1.639	1.370	1.099	.826	.552	.277	.000
17.9	2.981	2.717	2.452	2.186	1.918	1.648	1.377	1.105	.831	.556
.8	3.523	3.261	2.997	2.732	2.466	2.198	1.928	1.657	1.385	1.111
.7	4.065	3.804	3.542	3.279	3.014	2.747	2.479	2.210	1.939	1.667
.6	4.607	4.348	4.087	3.825	3.562	3.297	3.030	2.762	2.493	2.222
.5	5.149	4.891	4.632	4.372	4.110	3.846	3.581	3.315	3.047	2.778
.4	5.691	5.435	5.177	4.918	4.658	4.396	4.132	3.867	3.601	3.333
.3	6.233	5.978	5.722	5.464	5.205	4.945	4.683	4.420	4.155	3.889
.2	6.775	6.522	6.267	6.011	5.753	5.495	5.234	4.972	4.709	4.444
.1	7.317	7.065	6.812	6.557	6.301	6.044	5.785	5.525	5.263	5.000
.0	7.859	7.609	7.357	7.104	6.849	6.593	6.336	6.077	5.817	5.556
16.9	8.401	8.152	7.902	7.650	7.397	7.143	6.887	6.630	6.371	6.111
.8	8.943	8.696	8.447	8.197	7.945	7.692	7.438	7.182	6.925	6.667
.7	9.485	9.239	8.992	8.743	8.493	8.242	7.989	7.735	7.479	7.222
.6	10.027	9.783	9.537	9.290	9.041	8.791	8.540	8.287	8.033	7.778
.5	10.569	10.326	10.082	9.836	9.589	9.341	9.091	8.840	8.587	8.333
.4	11.111	10.870	10.627	10.383	10.137	9.890	9.642	9.392	9.141	8.889
.3	11.653	11.413	11.172	10.929	10.685	10.440	10.193	9.945	9.695	9.444
.2	12.195	11.957	11.717	11.475	11.233	10.989	10.744	10.497	10.249	10.000
.1	12.737	12.500	12.262	12.022	11.781	11.538	11.295	11.050	10.803	10.556
.0	13.279	13.043	12.807	12.568	12.329	12.088	11.846	11.602	11.357	11.111

.01	.054	.054	.054	.055	.055	.055	.055	.055	.055	.056
.02	.108	.109	.109	.109	.110	.110	.110	.111	.111	.111
.03	.163	.163	.163	.164	.164	.165	.165	.166	.166	.167
.04	.217	.217	.218	.219	.219	.220	.220	.221	.222	.222
.05	.271	.272	.272	.273	.274	.275	.275	.276	.277	.278
.06	.325	.326	.327	.328	.329	.330	.331	.331	.332	.333
.07	.379	.380	.381	.383	.384	.385	.386	.387	.388	.389
.08	.434	.435	.436	.437	.438	.440	.441	.442	.443	.444
.09	.488	.489	.490	.492	.493	.495	.496	.497	.499	.500



$1 + a_x$ 

18	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
15'9	13'821	13'587	13'351	13'115	12'877	12'637	12'397	12'155	11'911	11'667
'8	14'363	14'130	13'896	13'661	13'425	13'187	12'948	12'707	12'465	12'222
'7	14'905	14'674	14'441	14'208	13'973	13'736	13'499	13'260	13'019	12'778
'6	15'447	15'217	14'986	14'754	14'521	14'286	14'050	13'812	13'573	13'333
'5	15'989	15'761	15'531	15'301	15'068	14'835	14'601	14'365	14'127	13'889
'4	16'531	16'304	16'076	15'847	15'616	15'385	15'152	14'917	14'681	14'444
'3	17'073	16'848	16'621	16'393	16'164	15'934	15'702	15'470	15'235	15'000
'2	17'615	17'391	17'166	16'940	16'712	16'484	16'253	16'022	15'789	15'556
'1	18'157	17'935	17'711	17'486	17'260	17'033	16'804	16'575	16'343	16'111
'0	18'699	18'478	18'256	18'033	17'808	17'582	17'355	17'127	16'898	16'667
14'9	19'241	19'022	18'801	18'579	18'356	18'132	17'906	17'680	17'452	17'222
'8	19'783	19'565	19'346	19'126	18'904	18'681	18'457	18'232	18'006	17'778
'7	20'325	20'109	19'891	19'672	19'452	19'231	19'008	18'785	18'560	18'333
'6	20'867	20'652	20'436	20'219	20'000	19'780	19'559	19'337	19'114	18'889
'5	21'409	21'196	20'981	20'765	20'548	20'330	20'110	19'890	19'668	19'444
'4	21'951	21'739	21'526	21'311	21'096	20'879	20'661	20'442	20'222	20'000
'3	22'493	22'283	22'071	21'858	21'644	21'429	21'212	20'994	20'776	20'556
'2	23'035	22'826	22'616	22'404	22'192	21'978	21'763	21'547	21'330	21'111
'1	23'577	23'370	23'161	22'951	22'740	22'527	22'314	22'099	21'884	21'667
'0	24'119	23'913	23'706	23'497	23'288	23'077	22'865	22'652	22'438	22'222
13'9	24'661	24'457	24'251	24'044	23'836	23'626	23'416	23'204	22'992	22'778
'8	25'203	25'000	24'796	24'590	24'384	24'176	23'967	23'757	23'546	23'333
'7	25'745	25'543	25'341	25'137	24'932	24'725	24'518	24'309	24'100	23'889
'6	26'287	26'087	25'886	25'683	25'479	25'275	25'069	24'862	24'654	24'444
'5	26'829	26'630	26'431	26'230	26'027	25'824	25'620	25'414	25'208	25'000
'4	27'371	27'174	26'975	26'776	26'575	26'374	26'171	25'967	25'762	25'556
'3	27'913	27'717	27'520	27'322	27'123	26'923	26'722	26'519	26'316	26'111
'2	28'455	28'261	28'065	27'869	27'671	27'473	27'273	27'072	26'870	26'667
'1	28'997	28'804	28'610	28'415	28'219	28'022	27'824	27'624	27'424	27'222
'0	29'539	29'348	29'155	28'962	28'767	28'571	28'375	28'177	27'978	27'778
12'9	30'081	29'891	29'700	29'508	29'315	29'121	28'926	28'729	28'532	28'333
'8	30'623	30'435	30'245	30'055	29'863	29'670	29'477	29'282	29'086	28'889
'7	31'165	30'978	30'790	30'601	30'411	30'220	30'028	29'834	29'640	29'444
'6	31'707	31'522	31'335	31'148	30'959	30'769	30'579	30'387	30'194	30'000
'5	32'249	32'065	31'880	31'694	31'507	31'319	31'129	30'939	30'748	30'556
'4	32'791	32'609	32'425	32'240	32'055	31'868	31'680	31'492	31'302	31'111
'3	33'333	33'152	32'970	32'787	32'603	32'418	32'231	32'044	31'856	31'667
'2	33'875	33'696	33'515	33'333	33'151	32'967	32'782	32'597	32'410	32'222
'1	34'417	34'239	34'060	33'880	33'699	33'516	33'333	33'149	32'964	32'778
'0	34'959	34'783	34'605	34'426	34'247	34'066	33'884	33'702	33'518	33'333
11'9	35'501	35'326	35'150	34'973	34'795	34'615	34'435	34'254	34'072	33'889
'8	36'043	35'870	35'695	35'519	35'342	35'165	34'986	34'807	34'626	34'444
'7	36'585	36'413	36'240	36'066	35'890	35'714	35'537	35'359	35'180	35'000
'6	37'127	36'957	36'785	36'612	36'438	36'264	36'088	35'912	35'734	35'556
'5	37'669	37'500	37'330	37'158	36'986	36'813	36'639	36'464	36'288	36'111
'4	38'211	38'043	37'875	37'705	37'534	37'363	37'190	37'017	36'842	36'667
'3	38'753	38'587	38'420	38'251	38'082	37'912	37'741	37'569	37'396	37'222
'2	39'295	39'130	38'965	38'798	38'630	38'462	38'292	38'122	37'950	37'778
'1	39'837	39'674	39'510	39'344	39'178	39'011	38'843	38'674	38'504	38'333
'0	40'379	40'217	40'054	39'891	39'726	39'560	39'394	39'227	39'058	38'889

$1 + a_x$ 

18	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
10·9	40·921	40·761	40·599	40·437	40·274	40·110	39·945	39·779	39·612	39·444
·8	41·463	41·304	41·144	40·984	40·822	40·659	40·496	40·331	40·166	40·000
·7	42·005	41·848	41·689	41·530	41·370	41·209	41·047	40·884	40·720	40·556
·6	42·547	42·391	42·234	42·077	41·918	41·758	41·598	41·436	41·274	41·111
·5	43·089	42·935	42·779	42·623	42·466	42·308	42·149	41·989	41·828	41·667
·4	43·631	43·478	43·324	43·169	43·014	42·857	42·700	42·541	42·382	42·222
·3	44·173	44·022	43·869	43·716	43·562	43·407	43·251	43·094	42·936	42·778
·2	44·715	44·565	44·414	44·262	44·110	43·956	43·802	43·646	43·490	43·333
·1	45·257	45·109	44·959	44·809	44·658	44·505	44·353	44·199	44·044	43·889
·0	45·799	45·652	45·504	45·355	45·205	45·055	44·904	44·751	44·598	44·444
9·9	46·341	46·196	46·049	45·902	45·753	45·604	45·455	45·304	45·152	45·000
·8	46·883	46·739	46·594	46·448	46·301	46·154	46·006	45·856	45·706	45·556
·7	47·425	47·283	47·139	46·995	46·849	46·703	46·556	46·409	46·260	46·111
·6	47·967	47·826	47·684	47·541	47·397	47·253	47·107	46·961	46·814	46·667
·5	48·509	48·370	48·229	48·087	47·945	47·802	47·658	47·514	47·368	47·222
·4	49·051	48·913	48·774	48·634	48·493	48·352	48·209	48·066	47·922	47·778
·3	49·593	49·457	49·319	49·180	49·041	48·901	48·760	48·619	48·476	48·333
·2	50·135	50·000	49·864	49·727	49·589	49·451	49·311	49·171	49·030	48·889
·1	50·678	50·543	50·409	50·273	50·137	50·000	49·862	49·724	49·584	49·444
·0	51·220	51·087	50·954	50·820	50·685	50·549	50·413	50·276	50·139	50·000
8·9	51·762	51·630	51·499	51·366	51·233	51·099	50·964	50·829	50·693	50·556
·8	52·304	52·174	52·044	51·913	51·781	51·648	51·515	51·381	51·247	51·111
·7	52·846	52·717	52·589	52·459	52·329	52·198	52·066	51·934	51·801	51·667
·6	53·388	53·261	53·134	53·005	52·877	52·747	52·617	52·486	52·355	52·222
·5	53·930	53·804	53·678	53·552	53·425	53·297	53·168	53·039	52·909	52·778
·4	54·472	54·348	54·223	54·098	53·973	53·846	53·719	53·591	53·463	53·333
·3	55·014	54·891	54·768	54·645	54·521	54·396	54·270	54·144	54·017	53·889
·2	55·556	55·435	55·313	55·191	55·068	54·945	54·821	54·696	54·571	54·444
·1	56·098	55·978	55·858	55·738	55·616	55·495	55·372	55·249	55·125	55·000
·0	56·640	56·522	56·403	56·284	56·164	56·044	55·923	55·801	55·679	55·556
7·9	57·182	57·065	56·948	56·831	56·712	56·593	56·474	56·354	56·233	56·111
·8	57·724	57·609	57·493	57·377	57·260	57·143	57·025	56·906	56·787	56·667
·7	58·266	58·152	58·038	57·923	57·808	57·692	57·576	57·459	57·341	57·222
·6	58·808	58·696	58·583	58·470	58·356	58·242	58·127	58·011	57·895	57·778
·5	59·350	59·239	59·128	59·016	58·904	58·791	58·678	58·564	58·449	58·333
·4	59·892	59·783	59·673	59·563	59·452	59·341	59·229	59·116	59·003	58·889
·3	60·434	60·326	60·218	60·109	60·000	59·890	59·780	59·669	59·557	59·444
·2	60·976	60·870	60·763	60·656	60·548	60·440	60·331	60·221	60·111	60·000
·1	61·518	61·413	61·308	61·202	61·096	60·989	60·882	60·773	60·665	60·556
·0	62·060	61·957	61·853	61·749	61·644	61·538	61·433	61·326	61·219	61·111
·01	·051	·051	·051	·055	·055	·055	·055	·055	·055	·056
·02	·108	·109	·109	·109	·110	·110	·110	·110	·111	·111
·03	·163	·163	·163	·161	·161	·165	·165	·166	·166	·167
·04	·217	·217	·218	·219	·219	·220	·220	·221	·222	·222
·05	·271	·272	·272	·273	·274	·275	·275	·276	·277	·278
·06	·325	·326	·327	·328	·329	·330	·331	·331	·332	·333
·07	·379	·380	·381	·383	·384	·385	·386	·387	·388	·389
·08	·431	·435	·436	·437	·438	·440	·441	·442	·443	·444
·09	·488	·489	·490	·492	·493	·495	·496	·497	·499	·500

$1+a_x$ 

18	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
6'9	62'602	62'500	62'398	62'295	62'192	62'088	61'983	61'878	61'773	61'667
'8	63'144	63'043	62'943	62'842	62'740	62'637	62'534	62'431	62'327	62'222
'7	63'686	63'587	63'488	63'388	63'288	63'187	63'085	62'983	62'881	62'778
'6	64'228	64'130	64'033	63'934	63'836	63'736	63'636	63'536	63'435	63'333
'5	64'770	64'674	64'578	64'481	64'384	64'286	64'187	64'088	63'989	63'889
'4	65'312	65'217	65'123	65'027	64'932	64'835	64'738	64'641	64'543	64'444
'3	65'854	65'761	65'668	65'574	65'479	65'385	65'289	65'193	65'097	65'000
'2	66'396	66'304	66'213	66'120	66'027	65'934	65'840	65'746	65'651	65'556
'1	66'938	66'848	66'757	66'667	66'575	66'484	66'391	66'298	66'205	66'111
'0	67'480	67'391	67'302	67'213	67'123	67'033	66'942	66'851	66'759	66'667
5'9	68'022	67'935	67'847	67'760	67'671	67'582	67'493	67'403	67'313	67'222
'8	68'564	68'478	68'392	68'306	68'219	68'132	68'044	67'956	67'867	67'778
'7	69'106	69'022	68'937	68'852	68'767	68'681	68'595	68'508	68'421	68'333
'6	69'648	69'565	69'482	69'399	69'315	69'231	69'146	69'061	68'975	68'889
'5	70'190	70'109	70'027	69'945	69'863	69'780	69'697	69'613	69'529	69'444
'4	70'732	70'652	70'572	70'492	70'411	70'330	70'248	70'166	70'083	70'000
'3	71'274	71'196	71'117	71'038	70'959	70'879	70'799	70'718	70'637	70'556
'2	71'816	71'739	71'662	71'585	71'507	71'429	71'350	71'271	71'191	71'111
'1	72'358	72'283	72'207	72'131	72'055	71'978	71'901	71'823	71'745	71'667
'0	72'900	72'826	72'752	72'678	72'603	72'527	72'452	72'376	72'299	72'222
4'9	73'442	73'370	73'297	73'224	73'151	73'077	73'003	72'928	72'853	72'778
'8	73'984	73'913	73'842	73'770	73'699	73'626	73'554	73'481	73'407	73'333
'7	74'526	74'457	74'387	74'317	74'247	74'176	74'105	74'033	73'961	73'889
'6	75'068	75'000	74'932	74'863	74'795	74'725	74'656	74'586	74'515	74'444
'5	75'610	75'543	75'477	75'410	75'342	75'275	75'207	75'138	75'069	75'000
'4	76'152	76'087	76'022	75'956	75'890	75'824	75'758	75'691	75'623	75'556
'3	76'694	76'630	76'567	76'503	76'438	76'374	76'309	76'243	76'177	76'111
'2	77'236	77'174	77'112	77'049	76'986	76'923	76'860	76'796	76'731	76'667
'1	77'778	77'717	77'657	77'596	77'534	77'473	77'410	77'348	77'285	77'222
'0	78'320	78'261	78'202	78'142	78'082	78'022	77'961	77'901	77'839	77'778
3'9	78'862	78'804	78'747	78'689	78'630	78'571	78'512	78'453	78'393	78'333
'8	79'404	79'348	79'292	79'235	79'178	79'121	79'063	79'006	78'947	78'889
'7	79'946	79'891	79'837	79'781	79'726	79'670	79'614	79'558	79'501	79'444
'6	80'488	80'435	80'381	80'328	80'274	80'220	80'165	80'110	80'055	80'000
'5	81'030	80'978	80'926	80'874	80'822	80'769	80'716	80'663	80'609	80'556
'4	81'572	81'522	81'471	81'421	81'370	81'319	81'267	81'215	81'163	81'111
'3	82'114	82'065	82'016	81'967	81'918	81'868	81'818	81'768	81'717	81'667
'2	82'656	82'609	82'561	82'514	82'466	82'418	82'369	82'320	82'271	82'222
'1	83'198	83'152	83'106	83'060	83'014	82'967	82'920	82'873	82'825	82'778
'0	83'740	83'696	83'651	83'607	83'562	83'516	83'471	83'425	83'379	83'333
2'9	84'282	84'239	84'196	84'153	84'110	84'066	84'022	83'978	83'934	83'889
'8	84'824	84'783	84'741	84'699	84'658	84'615	84'573	84'530	84'488	84'444
'7	85'366	85'326	85'286	85'246	85'205	85'165	85'124	85'083	85'042	85'000
'6	85'908	85'870	85'831	85'792	85'753	85'714	85'675	85'635	85'596	85'556
'5	86'450	86'413	86'376	86'339	86'301	86'264	86'226	86'188	86'150	86'111
'4	86'992	86'957	86'921	86'885	86'849	86'813	86'777	86'740	86'704	86'667
'3	87'534	87'500	87'466	87'432	87'397	87'363	87'328	87'293	87'258	87'222
'2	88'076	88'043	88'011	87'978	87'945	87'912	87'879	87'845	87'812	87'778
'1	88'618	88'587	88'556	88'525	88'493	88'462	88'430	88'398	88'366	88'333
'0	89'160	89'130	89'101	89'071	89'041	89'011	88'981	88'950	88'920	88'889



$1 + a_x$ 

18	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
1'9	89'702	89'674	89'646	89'617	89'589	89'560	89'532	89'503	89'474	89'444
'8	90'244	90'217	90'191	90'164	90'137	90'110	90'083	90'055	90'028	90'000
'7	90'786	90'761	90'736	90'710	90'685	90'659	90'634	90'608	90'582	90'556
'6	91'328	91'304	91'281	91'257	91'233	91'209	91'185	91'160	91'136	91'111
'5	91'870	91'848	91'826	91'803	91'781	91'758	91'736	91'713	91'690	91'667
'4	92'412	92'391	92'371	92'350	92'329	92'308	92'287	92'265	92'244	92'222
'3	92'954	92'935	92'916	92'896	92'877	92'857	92'837	92'818	92'798	92'778
'2	93'496	93'478	93'460	93'443	93'425	93'407	93'388	93'370	93'352	93'333
'1	94'038	94'022	94'005	93'989	93'973	93'956	93'939	93'923	93'906	93'889
'0	94'580	94'565	94'550	94'536	94'521	94'505	94'490	94'475	94'460	94'444
'01	'054	'054	'054	'055	'055	'055	'055	'055	'055	'056
'02	'108	'109	'109	'109	'110	'110	'110	'110	'111	'111
'03	'163	'163	'163	'164	'164	'165	'165	'166	'166	'167
'04	'217	'217	'218	'219	'219	'220	'220	'221	'222	'222
'05	'271	'272	'272	'273	'274	'275	'275	'276	'277	'278
'06	'325	'326	'327	'328	'329	'330	'331	'331	'332	'333
'07	'379	'380	'381	'383	'384	'385	'386	'387	'388	'389
'08	'434	'435	'436	'437	'438	'440	'441	'442	'443	'444
'09	'488	'489	'490	'492	'493	'495	'496	'497	'499	'500

17	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
17'9	'279	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	'836	'559	'280	'000	'000	'000	'000	'000	'000	'000
'7	1'393	1'117	'840	'562	'282	'000	'000	'000	'000	'000
'6	1'950	1'676	1'401	1'124	'845	'565	'283	'000	'000	'000
'5	2'507	2'235	1'961	1'685	1'408	1'130	'850	'568	'285	'000
'4	3'064	2'793	2'521	2'247	1'972	1'695	1'416	1'136	'855	'571
'3	3'621	3'352	3'081	2'809	2'535	2'260	1'983	1'705	1'425	1'143
'2	4'178	3'911	3'641	3'371	3'099	2'825	2'550	2'273	1'994	1'714
'1	4'735	4'469	4'202	3'933	3'662	3'390	3'116	2'841	2'564	2'286
'0	5'292	5'028	4'762	4'494	4'225	3'955	3'683	3'409	3'134	2'857
16'9	5'850	5'587	5'322	5'056	4'789	4'520	4'249	3'977	3'704	3'429
'8	6'407	6'145	5'882	5'618	5'352	5'085	4'816	4'545	4'274	4'000
'7	6'964	6'704	6'443	6'180	5'915	5'650	5'382	5'114	4'843	4'571
'6	7'521	7'263	7'003	6'742	6'479	6'215	5'949	5'682	5'413	5'143
'5	8'078	7'821	7'563	7'303	7'042	6'780	6'516	6'250	5'983	5'714
'01	'056	'056	'056	'056	'056	'056	'057	'057	'057	'057
'02	'111	'112	'112	'112	'113	'113	'113	'114	'114	'114
'03	'167	'168	'168	'169	'169	'169	'170	'170	'171	'171
'04	'223	'223	'224	'225	'225	'226	'227	'227	'228	'229
'05	'279	'279	'280	'281	'282	'282	'283	'284	'285	'286
'06	'334	'335	'336	'337	'338	'339	'340	'341	'342	'343
'07	'390	'391	'392	'393	'394	'395	'397	'398	'399	'400
'08	'446	'447	'448	'449	'451	'452	'453	'455	'456	'457
'09	'501	'503	'504	'506	'507	'508	'510	'511	'513	'514



17	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
16.4	8'635	8'380	8'123	7'865	7'606	7'345	7'082	6'818	6'553	6'286
3	9'192	8'939	8'683	8'427	8'169	7'910	7'649	7'386	7'123	6'857
2	9'749	9'497	9'244	8'989	8'732	8'475	8'215	7'955	7'692	7'429
1	10'306	10'056	9'804	9'551	9'296	9'040	8'782	8'523	8'262	8'000
0	10'864	10'615	10'364	10'112	9'859	9'605	9'348	9'091	8'832	8'571
15.9	11'421	11'173	10'924	10'674	10'423	10'169	9'915	9'659	9'402	9'143
8	11'978	11'732	11'485	11'236	10'986	10'734	10'482	10'227	9'972	9'714
7	12'535	12'291	12'045	11'798	11'549	11'299	11'048	10'795	10'541	10'286
6	13'092	12'849	12'605	12'360	12'113	11'864	11'615	11'364	11'111	10'857
5	13'649	13'408	13'165	12'921	12'676	12'429	12'181	11'932	11'681	11'429
4	14'206	13'966	13'725	13'483	13'239	12'994	12'748	12'500	12'251	12'000
3	14'763	14'525	14'286	14'045	13'803	13'559	13'314	13'068	12'821	12'571
2	15'320	15'084	14'846	14'607	14'366	14'124	13'881	13'636	13'390	13'143
1	15'877	15'642	15'406	15'169	14'930	14'689	14'448	14'205	13'960	13'714
0	16'435	16'201	15'966	15'730	15'493	15'254	15'014	14'773	14'530	14'286
14.9	16'992	16'760	16'527	16'292	16'056	15'819	15'581	15'341	15'100	14'857
8	17'549	17'318	17'087	16'854	16'620	16'384	16'147	15'909	15'670	15'429
7	18'106	17'877	17'647	17'416	17'183	16'949	16'714	16'477	16'239	16'000
6	18'663	18'436	18'207	17'978	17'746	17'514	17'280	17'045	16'809	16'571
5	19'220	18'994	18'768	18'539	18'310	18'079	17'847	17'614	17'379	17'143
4	19'777	19'553	19'328	19'101	18'873	18'644	18'414	18'182	17'949	17'714
3	20'334	20'112	19'888	19'663	19'437	19'209	18'980	18'750	18'519	18'286
2	20'891	20'670	20'448	20'225	20'000	19'774	19'547	19'318	19'088	18'857
1	21'448	21'229	21'008	20'787	20'563	20'339	20'113	19'886	19'658	19'429
0	22'006	21'788	21'569	21'348	21'127	20'904	20'680	20'455	20'228	20'000
13.9	22'563	22'346	22'129	21'910	21'690	21'469	21'246	21'023	20'798	20'571
8	23'120	22'905	22'689	22'472	22'254	22'034	21'813	21'591	21'368	21'143
7	23'677	23'464	23'249	23'034	22'817	22'599	22'380	22'159	21'937	21'714
6	24'234	24'022	23'810	23'596	23'380	23'164	22'946	22'727	22'507	22'286
5	24'791	24'581	24'370	24'157	23'944	23'729	23'513	23'295	23'077	22'857
4	25'348	25'140	24'930	24'719	24'507	24'294	24'079	23'864	23'647	23'429
3	25'905	25'698	25'490	25'281	25'070	24'859	24'646	24'432	24'217	24'000
2	26'462	26'257	26'050	25'843	25'634	25'424	25'212	25'000	24'786	24'571
1	27'020	26'816	26'611	26'404	26'197	25'989	25'779	25'568	25'356	25'143
0	27'577	27'374	27'171	26'966	26'761	26'554	26'346	26'136	25'926	25'714
12.9	28'134	27'933	27'731	27'528	27'324	27'119	26'912	26'705	26'496	26'286
8	28'691	28'492	28'291	28'090	27'887	27'684	27'479	27'273	27'066	26'857
7	29'248	29'050	28'852	28'652	28'451	28'249	28'045	27'841	27'635	27'429
6	29'805	29'609	29'412	29'213	29'014	28'814	28'612	28'409	28'205	28'000
5	30'362	30'168	29'972	29'775	29'577	29'379	29'178	28'977	28'775	28'571
4	30'919	30'726	30'532	30'337	30'141	29'944	29'745	29'545	29'345	29'143
3	31'476	31'285	31'092	30'899	30'704	30'508	30'312	30'114	29'915	29'714
2	32'033	31'844	31'653	31'461	31'268	31'073	30'878	30'682	30'484	30'286
1	32'591	32'402	32'213	32'022	31'831	31'638	31'445	31'250	31'054	30'857
0	33'148	32'961	32'773	32'584	32'394	32'203	32'011	31'818	31'624	31'429
11.9	33'705	33'520	33'333	33'146	32'958	32'768	32'578	32'386	32'194	32'000
8	34'262	34'078	33'894	33'708	33'521	33'333	33'144	32'955	32'764	32'571
7	34'819	34'637	34'454	34'270	34'085	33'898	33'711	33'523	33'333	33'143
6	35'376	35'196	35'014	34'831	34'648	34'463	34'278	34'091	33'903	33'714
5	35'933	35'754	35'574	35'393	35'211	35'028	34'844	34'659	34'473	34'286

17	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
11.4	36'490	36'313	36'134	35'955	35'775	35'593	35'411	35'227	35'043	34'857
'3	37'047	36'872	36'695	36'517	36'338	36'158	35'977	35'795	35'613	35'429
'2	37'604	37'430	37'255	37'079	36'901	36'723	36'544	36'364	36'182	36'000
'1	38'162	37'989	37'815	37'640	37'465	37'288	37'110	36'932	36'752	36'571
'0	38'719	38'547	38'375	38'202	38'028	37'853	37'677	37'500	37'322	37'143
10.9	39'276	39'106	38'936	38'764	38'592	38'418	38'244	38'068	37'892	37'714
'8	39'833	39'665	39'496	39'326	39'155	38'983	38'810	38'636	38'462	38'286
'7	40'390	40'223	40'056	39'888	39'718	39'548	39'377	39'205	39'031	38'857
'6	40'947	40'782	40'616	40'449	40'282	40'113	39'943	39'773	39'601	39'429
'5	41'504	41'341	41'176	41'011	40'845	40'678	40'510	40'341	40'171	40'000
'4	42'061	41'899	41'737	41'573	41'408	41'243	41'076	40'909	40'741	40'571
'3	42'618	42'458	42'297	42'135	41'972	41'808	41'643	41'477	41'311	41'143
'2	43'175	43'017	42'857	42'697	42'535	42'373	42'210	42'045	41'880	41'714
'1	43'733	43'575	43'417	43'258	43'099	42'938	42'776	42'614	42'450	42'286
'0	44'290	44'134	43'978	43'820	43'662	43'503	43'343	43'182	43'020	42'857
9.9	44'847	44'693	44'538	44'382	44'225	44'068	43'909	43'750	43'590	43'429
'8	45'404	45'251	45'098	44'944	44'789	44'633	44'476	44'318	44'160	44'000
'7	45'961	45'810	45'658	45'506	45'352	45'198	45'042	44'886	44'729	44'571
'6	46'518	46'369	46'218	46'067	45'915	45'763	45'609	45'455	45'299	45'143
'5	47'075	46'927	46'779	46'629	46'479	46'328	46'176	46'023	45'869	45'714
'4	47'632	47'486	47'339	47'191	47'042	46'893	46'742	46'591	46'439	46'286
'3	48'189	48'045	47'899	47'753	47'606	47'458	47'309	47'159	47'009	46'857
'2	48'747	48'603	48'459	48'315	48'169	48'023	47'875	47'727	47'578	47'429
'1	49'304	49'162	49'020	48'876	48'732	48'588	48'442	48'295	48'148	48'000
'0	49'861	49'721	49'580	49'438	49'296	49'153	49'008	48'864	48'718	48'571
8.9	50'418	50'279	50'140	50'000	49'859	49'718	49'575	49'432	49'288	49'143
'8	50'975	50'838	50'700	50'562	50'423	50'282	50'142	50'000	49'858	49'714
'7	51'532	51'397	51'261	51'124	50'986	50'847	50'708	50'568	50'427	50'286
'6	52'089	51'955	51'821	51'685	51'549	51'412	51'275	51'136	50'997	50'857
'5	52'646	52'514	52'381	52'247	52'113	51'977	51'841	51'705	51'567	51'429
'4	53'203	53'073	52'941	52'809	52'676	52'542	52'408	52'273	52'137	52'000
'3	53'760	53'631	53'501	53'371	53'239	53'107	52'975	52'841	52'707	52'571
'2	54'318	54'190	54'062	53'933	53'803	53'672	53'541	53'409	53'276	53'143
'1	54'875	54'749	54'622	54'494	54'366	54'237	54'108	53'977	53'846	53'714
'0	55'432	55'307	55'182	55'056	54'930	54'802	54'674	54'545	54'416	54'286
7.9	55'989	55'866	55'742	55'618	55'493	55'367	55'241	55'114	54'986	54'857
'8	56'546	56'425	56'303	56'180	56'056	55'932	55'807	55'682	55'556	55'429
'7	57'103	56'983	56'863	56'742	56'620	56'497	56'374	56'250	56'125	56'000
'6	57'660	57'542	57'423	57'303	57'183	57'062	56'941	56'818	56'695	56'571
'5	58'217	58'101	57'983	57'865	57'746	57'627	57'507	57'386	57'265	57'143
'01	·056	·056	·056	·056	·056	·056	·057	·057	·057	·057
'02	·111	·112	·112	·112	·113	·113	·113	·114	·114	·114
'03	·167	·168	·168	·169	·169	·169	·170	·170	·171	·171
'04	·223	·223	·224	·225	·225	·226	·227	·227	·228	·229
'05	·279	·279	·280	·281	·282	·282	·283	·281	·285	·286
'06	·334	·335	·336	·337	·338	·339	·340	·341	·342	·343
'07	·390	·391	·392	·393	·394	·395	·397	·398	·399	·400
'08	·446	·447	·448	·449	·451	·452	·453	·455	·456	·457
'09	·501	·503	·504	·506	·507	·508	·510	·511	·513	·514

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
7.4	58'774	58'659	58'543	58'427	58'310	58'192	58'074	57'955	57'835	57'714
3	59'331	59'218	59'104	58'989	58'873	58'757	58'640	58'523	58'405	58'286
2	59'889	59'777	59'664	59'551	59'437	59'322	59'207	59'091	58'974	58'857
1	60'446	60'335	60'224	60'112	60'000	59'887	59'773	59'659	59'544	59'429
0	61'003	60'894	60'784	60'674	60'563	60'452	60'340	60'227	60'114	60'000
6.9	61'560	61'453	61'345	61'236	61'127	61'017	60'907	60'795	60'684	60'571
8	62'117	62'011	61'905	61'798	61'690	61'582	61'473	61'364	61'254	61'143
7	62'674	62'570	62'465	62'360	62'254	62'147	62'040	61'932	61'823	61'714
6	63'231	63'128	63'025	62'921	62'817	62'712	62'606	62'500	62'393	62'286
5	63'788	63'687	63'585	63'483	63'380	63'277	63'173	63'068	62'963	62'857
4	64'345	64'246	64'146	64'045	63'944	63'842	63'739	63'636	63'533	63'429
3	64'903	64'804	64'706	64'607	64'507	64'407	64'306	64'205	64'103	64'000
2	65'460	65'363	65'266	65'169	65'070	64'972	64'873	64'773	64'672	64'571
1	66'017	65'922	65'826	65'730	65'634	65'537	65'439	65'341	65'242	65'143
0	66'574	66'480	66'387	66'292	66'197	66'102	66'006	65'909	65'812	65'714
5.9	67'131	67'039	66'947	66'854	66'761	66'667	66'572	66'477	66'382	66'286
8	67'688	67'598	67'507	67'416	67'324	67'232	67'139	67'045	66'952	66'857
7	68'245	68'156	68'067	67'978	67'887	67'797	67'705	67'614	67'521	67'429
6	68'802	68'715	68'627	68'539	68'451	68'362	68'272	68'182	68'091	68'000
5	69'359	69'274	69'188	69'101	69'014	68'927	68'839	68'750	68'661	68'571
4	69'916	69'832	69'748	69'663	69'577	69'492	69'405	69'318	69'231	69'143
3	70'474	70'391	70'308	70'225	70'141	70'057	69'972	69'886	69'801	69'714
2	71'031	70'950	70'868	70'787	70'704	70'621	70'538	70'455	70'370	70'286
1	71'588	71'508	71'429	71'348	71'268	71'186	71'105	71'023	70'940	70'857
0	72'145	72'067	71'989	71'910	71'831	71'751	71'671	71'591	71'510	71'429
4.9	72'702	72'626	72'549	72'472	72'394	72'316	72'238	72'159	72'080	72'000
8	73'259	73'184	73'109	73'034	72'958	72'881	72'805	72'727	72'650	72'571
7	73'816	73'743	73'669	73'596	73'521	73'446	73'371	73'295	73'219	73'143
6	74'373	74'302	74'230	74'157	74'085	74'011	73'938	73'864	73'789	73'714
5	74'930	74'860	74'790	74'719	74'648	74'576	74'504	74'432	74'359	74'286
4	75'487	75'419	75'350	75'281	75'211	75'141	75'071	75'000	74'929	74'857
3	76'045	75'978	75'910	75'843	75'775	75'706	75'637	75'568	75'499	75'429
2	76'602	76'536	76'471	76'405	76'338	76'271	76'204	76'136	76'068	76'000
1	77'159	77'095	77'031	76'966	76'901	76'836	76'771	76'705	76'638	76'571
0	77'716	77'654	77'591	77'528	77'465	77'401	77'337	77'273	77'208	77'143
3.9	78'273	78'212	78'151	78'090	78'028	77'966	77'904	77'841	77'778	77'714
8	78'830	78'771	78'711	78'652	78'592	78'531	78'470	78'409	78'348	78'286
7	79'387	79'330	79'272	79'213	79'155	79'096	79'037	78'977	78'917	78'857
6	79'944	79'888	79'832	79'775	79'718	79'661	79'603	79'545	79'487	79'429
5	80'501	80'447	80'392	80'337	80'282	80'226	80'170	80'114	80'057	80'000
4	81'059	81'006	80'952	80'899	80'845	80'791	80'737	80'682	80'627	80'571
3	81'616	81'564	81'513	81'461	81'408	81'356	81'303	81'250	81'197	81'143
2	82'173	82'123	82'073	82'022	81'972	81'921	81'870	81'818	81'766	81'714
1	82'730	82'682	82'633	82'584	82'535	82'486	82'436	82'386	82'336	82'286
0	83'287	83'240	83'193	83'146	83'099	83'051	83'003	82'955	82'906	82'857
2.9	83'844	83'799	83'754	83'708	83'662	83'616	83'569	83'523	83'476	83'429
8	84'401	84'358	84'314	84'270	84'225	84'181	84'136	84'091	84'046	84'000
7	84'958	84'916	84'874	84'831	84'789	84'746	84'703	84'659	84'615	84'571
6	85'515	85'475	85'434	85'393	85'352	85'311	85'269	85'227	85'185	85'143
5	86'072	86'034	85'994	85'955	85'915	85'876	85'836	85'795	85'755	85'714



$$1 + a_x$$

17	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
2'4	86'630	86'592	86'555	86'517	86'479	86'441	86'402	86'364	86'325	86'286
'3	87'187	87'151	87'115	87'079	87'042	87'006	86'969	86'932	86'895	86'857
'2	87'744	87'709	87'675	87'640	87'606	87'571	87'535	87'500	87'464	87'429
'1	88'301	88'268	88'235	88'202	88'169	88'136	88'102	88'068	88'034	88'000
'0	88'858	88'827	88'796	88'764	88'732	88'701	88'669	88'636	88'604	88'571
16'9	89'415	89'385	89'356	89'326	89'296	89'266	89'235	89'205	89'174	89'143
'8	89'972	89'944	89'916	89'888	89'859	89'831	89'802	89'773	89'744	89'714
'7	90'529	90'503	90'476	90'449	90'423	90'395	90'368	90'341	90'313	90'286
'6	91'086	91'061	91'036	91'011	90'986	90'960	90'935	90'909	90'883	90'857
'5	91'643	91'620	91'597	91'573	91'549	91'525	91'501	91'477	91'453	91'429
'4	92'201	92'179	92'157	92'135	92'113	92'090	92'068	92'045	92'023	92'000
'3	92'758	92'737	92'717	92'697	92'676	92'655	92'635	92'614	92'593	92'571
'2	93'315	93'296	93'277	93'258	93'239	93'220	93'201	93'182	93'162	93'143
'1	93'872	93'855	93'838	93'820	93'803	93'785	93'768	93'750	93'732	93'714
'0	94'429	94'413	94'398	94'382	94'366	94'350	94'334	94'318	94'302	94'286
'01	·056	·056	·056	·056	·056	·056	·057	·057	·057	·057
'02	·111	·112	·112	·112	·113	·113	·113	·114	·114	·114
'03	·167	·168	·168	·169	·169	·169	·170	·170	·171	·171
'04	·223	·223	·224	·225	·225	·226	·227	·227	·228	·229
'05	·279	·279	·280	·281	·282	·282	·283	·284	·285	·286
'06	·334	·335	·336	·337	·338	·339	·340	·341	·342	·343
'07	·390	·391	·392	·393	·394	·395	·397	·398	·399	·400
'08	·446	·447	·448	·449	·451	·452	·453	·455	·456	·457
'09	·501	·503	·504	·506	·507	·508	·510	·511	·513	·514
17	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
17'4	·287	·000	·000	·000	·000	·000	·000	·000	·000	·000
'3	·860	·575	·288	·000	·000	·000	·000	·000	·000	·000
'2	1'433	1'149	·865	·578	·290	·000	·000	·000	·000	·000
'1	2'006	1'724	1'441	1'156	·870	·581	·292	·000	·000	·000
'0	2'579	2'299	2'017	1'734	1'449	1'163	·875	·585	·293	·000
16'9	3'152	2'874	2'594	2'312	2'029	1'744	1'458	1'170	·880	·588
'8	3'725	3'448	3'170	2'890	2'609	2'326	2'041	1'754	1'466	1'176
'7	4'298	4'023	3'746	3'468	3'188	2'907	2'624	2'339	2'053	1'765
'6	4'871	4'598	4'323	4'046	3'768	3'488	3'207	2'924	2'639	2'353
'5	5'444	5'172	4'899	4'624	4'348	4'070	3'790	3'509	3'226	2'941
'01	·057	·057	·058	·058	·058	·058	·058	·058	·059	·059
'02	·115	·115	·115	·116	·116	·116	·117	·117	·117	·118
'03	·172	·172	·173	·173	·174	·174	·175	·175	·176	·176
'04	·229	·230	·231	·231	·232	·233	·233	·234	·235	·235
'05	·287	·287	·288	·289	·290	·291	·292	·292	·293	·294
'06	·344	·345	·346	·347	·348	·349	·350	·351	·352	·353
'07	·401	·402	·403	·405	·406	·407	·408	·409	·411	·412
'08	·458	·460	·461	·462	·461	·465	·466	·468	·469	·471
'09	·516	·517	·519	·520	·522	·523	·525	·526	·528	·529



$1 + a_x$ 

17	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
16'4	6'017	5'747	5'476	5'202	4'928	4'651	4'373	4'094	3'812	3'529
'3	6'590	6'322	6'052	5'780	5'507	5'233	4'956	4'678	4'399	4'118
'2	7'163	6'897	6'628	6'358	6'087	5'814	5'539	5'263	4'985	4'706
'1	7'736	7'471	7'205	6'936	6'667	6'395	6'122	5'848	5'572	5'294
'0	8'309	8'046	7'781	7'514	7'246	6'977	6'706	6'433	6'158	5'882
15'9	8'883	8'621	8'357	8'092	7'826	7'558	7'289	7'018	6'745	6'471
'8	9'456	9'195	8'934	8'671	8'406	8'140	7'872	7'602	7'331	7'059
'7	10'029	9'770	9'510	9'249	8'986	8'721	8'455	8'187	7'918	7'647
'6	10'602	10'345	10'086	9'827	9'565	9'302	9'038	8'772	8'504	8'235
'5	11'175	10'920	10'663	10'405	10'145	9'884	9'621	9'357	9'091	8'824
'4	11'748	11'494	11'239	10'983	10'725	10'465	10'204	9'942	9'677	9'412
'3	12'321	12'069	11'816	11'561	11'304	11'047	10'787	10'526	10'264	10'000
'2	12'894	12'644	12'392	12'139	11'884	11'628	11'370	11'111	10'850	10'588
'1	13'467	13'218	12'968	12'717	12'464	12'209	11'953	11'696	11'437	11'176
'0	14'040	13'793	13'545	13'295	13'043	12'791	12'536	12'281	12'023	11'765
14'9	14'613	14'368	14'121	13'873	13'623	13'372	13'120	12'865	12'610	12'353
'8	15'186	14'943	14'697	14'451	14'203	13'953	13'703	13'450	13'196	12'941
'7	15'759	15'517	15'274	15'029	14'783	14'535	14'286	14'035	13'783	13'529
'6	16'332	16'092	15'850	15'607	15'362	15'116	14'869	14'620	14'370	14'118
'5	16'905	16'667	16'427	16'185	15'942	15'698	15'452	15'205	14'956	14'706
'4	17'479	17'241	17'003	16'763	16'522	16'279	16'035	15'789	15'543	15'294
'3	18'052	17'816	17'579	17'341	17'101	16'860	16'618	16'374	16'129	15'882
'2	18'625	18'391	18'156	17'919	17'681	17'442	17'201	16'959	16'716	16'471
'1	19'198	18'966	18'732	18'497	18'261	18'023	17'784	17'544	17'302	17'059
'0	19'771	19'540	19'308	19'075	18'841	18'605	18'367	18'129	17'889	17'647
13'9	20'344	20'115	19'885	19'653	19'420	19'186	18'950	18'713	18'475	18'235
'8	20'917	20'690	20'461	20'231	20'000	19'767	19'534	19'298	19'062	18'824
'7	21'490	21'264	21'037	20'809	20'580	20'349	20'117	19'883	19'648	19'412
'6	22'063	21'839	21'614	21'387	21'159	20'930	20'700	20'468	20'235	20'000
'5	22'636	22'414	22'190	21'965	21'739	21'512	21'283	21'053	20'821	20'588
'4	23'209	22'989	22'767	22'543	22'319	22'093	21'866	21'637	21'408	21'176
'3	23'782	23'563	23'343	23'121	22'899	22'674	22'449	22'222	21'994	21'765
'2	24'355	24'138	23'919	23'699	23'478	23'256	23'032	22'807	22'581	22'353
'1	24'928	24'713	24'496	24'277	24'058	23'837	23'615	23'392	23'167	22'941
'0	25'501	25'287	25'072	24'855	24'638	24'419	24'198	23'977	23'754	23'529
12'9	26'074	25'862	25'648	25'431	25'217	25'000	24'781	24'561	24'340	24'118
'8	26'648	26'437	26'225	26'012	25'797	25'581	25'364	25'146	24'927	24'706
'7	27'221	27'011	26'801	26'590	26'377	26'163	25'948	25'731	25'513	25'294
'6	27'794	27'586	27'378	27'168	26'957	26'744	26'531	26'316	26'100	25'882
'5	28'367	28'161	27'954	27'746	27'536	27'326	27'114	26'901	26'686	26'471
'4	28'940	28'736	28'530	28'324	28'116	27'907	27'697	27'485	27'273	27'059
'3	29'513	29'310	29'107	28'902	28'696	28'488	28'280	28'070	27'859	27'647
'2	30'086	29'885	29'683	29'480	29'275	29'070	28'863	28'655	28'446	28'235
'1	30'659	30'460	30'259	30'058	29'855	29'651	29'446	29'240	29'032	28'824
'0	31'232	31'034	30'836	30'636	30'435	30'233	30'029	29'825	29'619	29'412
11'9	31'805	31'609	31'412	31'214	31'014	30'814	30'612	30'409	30'205	30'000
'8	32'378	32'184	31'988	31'792	31'594	31'395	31'195	30'994	30'792	30'588
'7	32'951	32'759	32'565	32'370	32'174	31'977	31'778	31'579	31'378	31'176
'6	33'524	33'333	33'141	32'948	32'754	32'558	32'362	32'164	31'965	31'765
'5	34'097	33'908	33'718	33'526	33'333	33'140	32'945	32'749	32'551	32'353

$1 + a_x$ 

17	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
11'4	34'670	34'483	34'294	34'104	33'913	33'721	33'528	33'333	33'138	32'941
'3	35'244	35'057	34'870	34'682	34'493	34'302	34'111	33'918	33'724	33'529
'2	35'817	35'632	35'447	35'260	35'072	34'884	34'694	34'503	34'311	34'118
'1	36'390	36'207	36'023	35'838	35'652	35'465	35'277	35'088	34'897	34'706
'0	36'963	36'782	36'599	36'416	36'232	36'047	35'860	35'673	35'484	35'294
10'9	37'536	37'356	37'176	36'994	36'812	36'628	36'443	36'257	36'070	35'882
'8	38'109	37'931	37'752	37'572	37'391	37'209	37'026	36'842	36'657	36'471
'7	38'682	38'506	38'329	38'150	37'971	37'791	37'609	37'427	37'243	37'059
'6	39'255	39'080	38'905	38'728	38'551	38'372	38'192	38'012	37'830	37'647
'5	39'828	39'655	39'481	39'306	39'130	38'953	38'776	38'596	38'416	38'235
'4	40'401	40'230	40'058	39'884	39'710	39'535	39'359	39'181	39'003	38'824
'3	40'974	40'805	40'634	40'462	40'290	40'116	39'942	39'766	39'589	39'412
'2	41'547	41'379	41'210	41'040	40'870	40'698	40'525	40'351	40'176	40'000
'1	42'120	41'954	41'787	41'618	41'449	41'279	41'108	40'936	40'762	40'588
'0	42'693	42'529	42'363	42'197	42'029	41'860	41'691	41'520	41'349	41'176
9'9	43'266	43'103	42'939	42'775	42'609	42'442	42'274	42'105	41'935	41'765
'8	43'840	43'678	43'516	43'353	43'188	43'023	42'857	42'690	42'522	42'353
'7	44'413	44'253	44'092	43'931	43'768	43'605	43'440	43'275	43'109	42'941
'6	44'986	44'828	44'669	44'509	44'348	44'186	44'023	43'860	43'695	43'529
'5	45'559	45'402	45'245	45'087	44'928	44'767	44'606	44'444	44'282	44'118
'4	46'132	45'977	45'821	45'665	45'507	45'349	45'190	45'029	44'868	44'706
'3	46'705	46'552	46'398	46'243	46'087	45'930	45'773	45'614	45'455	45'294
'2	47'278	47'126	46'974	46'821	46'667	46'512	46'356	46'199	46'041	45'882
'1	47'851	47'701	47'550	47'399	47'246	47'093	46'939	46'784	46'628	46'471
'0	48'424	48'276	48'127	47'977	47'826	47'674	47'522	47'368	47'214	47'059
8'9	48'997	48'851	48'703	48'555	48'406	48'256	48'105	47'953	47'801	47'647
'8	49'570	49'425	49'280	49'133	48'986	48'837	48'688	48'538	48'387	48'235
'7	50'143	50'000	49'856	49'711	49'565	49'419	49'271	49'123	48'974	48'824
'6	50'716	50'575	50'432	50'289	50'145	50'000	49'854	49'708	49'560	49'412
'5	51'289	51'149	51'009	50'867	50'725	50'581	50'437	50'292	50'147	50'000
'4	51'862	51'724	51'585	51'445	51'304	51'163	51'020	50'877	50'733	50'588
'3	52'436	52'299	52'161	52'023	51'884	51'744	51'604	51'462	51'320	51'176
'2	53'009	52'874	52'738	52'601	52'464	52'326	52'187	52'047	51'906	51'765
'1	53'582	53'448	53'314	53'179	53'043	52'907	52'770	52'632	52'493	52'353
'0	54'155	54'023	53'890	53'757	53'623	53'488	53'353	53'216	53'079	52'941
7'9	54'728	54'598	54'467	54'335	54'203	54'070	53'936	53'801	53'666	53'529
'8	55'301	55'172	55'043	54'913	54'783	54'651	54'519	54'386	54'252	54'118
'7	55'874	55'747	55'620	55'491	55'362	55'233	55'102	54'971	54'839	54'706
'6	56'447	56'322	56'196	56'069	55'942	55'814	55'685	55'556	55'425	55'294
'5	57'020	56'897	56'772	56'647	56'522	56'395	56'268	56'140	56'012	55'882
'01	·057	·057	·058	·058	·058	·058	·058	·058	·059	·059
'02	·115	·115	·115	·116	·116	·116	·117	·117	·117	·118
'03	·172	·172	·173	·173	·174	·174	·175	·175	·176	·176
'04	·229	·230	·231	·231	·232	·233	·233	·234	·235	·235
'05	·287	·287	·288	·289	·290	·291	·292	·292	·293	·294
'06	·344	·345	·346	·347	·348	·349	·350	·351	·352	·353
'07	·401	·402	·403	·405	·406	·407	·408	·409	·411	·412
'08	·458	·460	·461	·462	·464	·465	·466	·468	·469	·471
'09	·516	·517	·519	·520	·522	·523	·525	·526	·528	·529

$$1 + a_x$$

17	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+1}$										
7.4	57.593	57.471	57.349	57.225	57.101	56.977	56.851	56.725	56.598	56.471
3	58.166	58.046	57.925	57.803	57.681	57.558	57.434	57.310	57.185	57.059
2	58.739	58.621	58.501	58.382	58.261	58.140	58.017	57.895	57.771	57.647
1	59.312	59.195	59.078	58.960	58.841	58.721	58.601	58.480	58.358	58.235
0	59.885	59.770	59.654	59.538	59.420	59.302	59.184	59.064	58.944	58.824
6.9	60.458	60.345	60.231	60.116	60.000	59.884	59.767	59.649	59.531	59.412
8	61.032	60.920	60.807	60.694	60.580	60.465	60.350	60.234	60.117	60.000
7	61.605	61.494	61.383	61.272	61.159	61.047	60.933	60.819	60.704	60.588
6	62.178	62.069	61.960	61.850	61.739	61.628	61.516	61.404	61.290	61.176
5	62.751	62.644	62.536	62.428	62.319	62.209	62.099	61.988	61.877	61.765
4	63.324	63.218	63.112	63.006	62.899	62.791	62.682	62.573	62.463	62.353
3	63.897	63.793	63.689	63.584	63.478	63.372	63.265	63.158	63.050	62.941
2	64.470	64.368	64.265	64.162	64.058	63.953	63.848	63.743	63.636	63.529
1	65.043	64.943	64.842	64.740	64.638	64.535	64.431	64.327	64.223	64.118
0	65.616	65.517	65.418	65.318	65.217	65.116	65.015	64.912	64.809	64.706
5.9	66.189	66.092	65.994	65.896	65.797	65.698	65.598	65.497	65.396	65.294
8	66.762	66.667	66.571	66.474	66.377	66.279	66.181	66.082	65.982	65.882
7	67.335	67.241	67.147	67.052	66.957	66.860	66.764	66.667	66.569	66.471
6	67.908	67.816	67.723	67.630	67.536	67.442	67.347	67.251	67.155	67.059
5	68.481	68.391	68.300	68.208	68.116	68.023	67.930	67.836	67.742	67.647
4	69.054	68.966	68.876	68.786	68.696	68.605	68.513	68.421	68.328	68.235
3	69.628	69.540	69.452	69.364	69.275	69.186	69.096	69.006	68.915	68.824
2	70.201	70.115	70.029	69.942	69.855	69.767	69.679	69.591	69.501	69.412
1	70.774	70.690	70.605	70.520	70.435	70.349	70.262	70.175	70.088	70.000
0	71.347	71.264	71.182	71.098	71.014	70.930	70.845	70.760	70.674	70.588
4.9	71.920	71.839	71.758	71.676	71.594	71.512	71.429	71.345	71.261	71.176
8	72.493	72.414	72.334	72.254	72.174	72.093	72.012	71.930	71.848	71.765
7	73.066	72.989	72.911	72.832	72.754	72.674	72.595	72.515	72.434	72.353
6	73.639	73.563	73.487	73.410	73.333	73.256	73.178	73.099	73.021	72.941
5	74.212	74.138	74.063	73.988	73.913	73.837	73.761	73.684	73.607	73.529
4	74.785	74.713	74.640	74.566	74.493	74.419	74.344	74.269	74.194	74.118
3	75.358	75.287	75.216	75.145	75.072	75.000	74.927	74.854	74.780	74.706
2	75.931	75.862	75.793	75.723	75.652	75.581	75.510	75.439	75.367	75.294
1	76.504	76.437	76.369	76.301	76.232	76.163	76.093	76.023	75.953	75.882
0	77.077	77.011	76.945	76.879	76.812	76.744	76.676	76.608	76.540	76.471
3.9	77.650	77.586	77.522	77.457	77.391	77.326	77.259	77.193	77.126	77.059
8	78.223	78.161	78.098	78.035	77.971	77.907	77.843	77.778	77.713	77.647
7	78.797	78.736	78.674	78.613	78.551	78.488	78.426	78.363	78.299	78.235
6	79.370	79.310	79.251	79.191	79.130	79.070	79.009	78.947	78.886	78.824
5	79.943	79.885	79.827	79.769	79.710	79.651	79.592	79.532	79.472	79.412
4	80.516	80.460	80.403	80.347	80.290	80.233	80.175	80.117	80.059	80.000
3	81.089	81.034	80.980	80.925	80.870	80.814	80.758	80.702	80.645	80.588
2	81.662	81.609	81.556	81.503	81.449	81.395	81.341	81.287	81.232	81.176
1	82.235	82.184	82.133	82.081	82.029	81.977	81.924	81.871	81.818	81.765
0	82.808	82.759	82.709	82.659	82.609	82.558	82.507	82.456	82.405	82.353
2.9	83.381	83.333	83.285	83.237	83.188	83.140	83.090	83.041	82.991	82.941
8	83.954	83.908	83.862	83.815	83.768	83.721	83.673	83.626	83.578	83.529
7	84.527	84.483	84.438	84.393	84.348	84.302	84.257	84.211	84.164	84.118
6	85.100	85.057	85.014	84.971	84.928	84.884	84.840	84.795	84.751	84.706
5	85.673	85.632	85.591	85.549	85.507	85.465	85.423	85.380	85.337	85.294



$1 + a_x$ 

17	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
2'4	86'246	86'207	86'167	86'127	86'087	86'047	86'006	85'965	85'924	85'882
'3	86'819	86'782	86'744	86'705	86'667	86'628	86'589	86'550	86'510	86'471
'2	87'393	87'356	87'320	87'283	87'246	87'209	87'172	87'134	87'097	87'059
'1	87'966	87'931	87'896	87'861	87'826	87'791	87'755	87'719	87'683	87'647
'0	88'539	88'506	88'473	88'439	88'406	88'372	88'338	88'304	88'270	88'235
1'9	89'112	89'080	89'049	89'017	88'986	88'953	88'921	88'889	88'856	88'824
'8	89'685	89'655	89'625	89'595	89'565	89'535	89'504	89'474	89'443	89'412
'7	90'258	90'230	90'202	90'173	90'145	90'116	90'087	90'058	90'029	90'000
'6	90'831	90'805	90'778	90'751	90'725	90'698	90'671	90'643	90'616	90'588
'5	91'404	91'379	91'354	91'329	91'304	91'279	91'254	91'228	91'202	91'176
'4	91'977	91'954	91'931	91'908	91'884	91'860	91'837	91'813	91'789	91'765
'3	92'550	92'529	92'507	92'486	92'464	92'442	92'420	92'395	92'375	92'353
'2	93'123	93'103	93'084	93'064	93'043	93'023	93'003	92'982	92'962	92'941
'1	93'696	93'678	93'660	93'642	93'623	93'605	93'586	93'567	93'548	93'529
'0	94'269	94'253	94'236	94'220	94'203	94'186	94'169	94'152	94'135	94'118
'01	'057	'057	'058	'058	'058	'058	'058	'058	'059	'059
'02	'115	'115	'115	'116	'116	'116	'117	'117	'117	'118
'03	'172	'172	'173	'173	'174	'174	'175	'175	'176	'176
'04	'229	'230	'231	'231	'232	'233	'233	'234	'235	'235
'05	'287	'287	'288	'289	'290	'291	'292	'292	'293	'294
'06	'344	'345	'346	'347	'348	'349	'350	'351	'352	'353
'07	'401	'402	'403	'405	'406	'407	'408	'409	'411	'412
'08	'458	'460	'461	'462	'464	'465	'466	'468	'469	'471
'09	'516	'517	'519	'520	'522	'523	'525	'526	'528	'529

16	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
16'9	'295	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	'885	'592	'297	'000	'000	'000	'000	'000	'000	'000
'7	1'475	1'183	'890	'595	'299	'000	'000	'000	'000	'000
'6	2'065	1'775	1'484	1'190	'896	'599	'300	'000	'000	'000
'5	2'655	2'367	2'077	1'786	1'493	1'198	'901	'602	'302	'000
'4	3'245	2'959	2'671	2'381	2'090	1'796	1'502	1'205	'906	'606
'3	3'835	3'550	3'264	2'976	2'687	2'395	2'102	1'807	1'511	1'212
'2	4'425	4'142	3'858	3'571	3'284	2'994	2'703	2'410	2'115	1'818
'1	5'015	4'734	4'451	4'167	3'881	3'593	3'303	3'012	2'719	2'424
'0	5'605	5'325	5'045	4'762	4'478	4'192	3'904	3'614	3'323	3'030
'01	'059	'059	'059	'060	'060	'060	'060	'060	'060	'061
'02	'118	'118	'119	'119	'119	'120	'120	'120	'121	'121
'03	'177	'178	'178	'179	'179	'180	'180	'181	'181	'182
'04	'236	'237	'237	'238	'239	'240	'240	'241	'242	'242
'05	'295	'296	'297	'298	'299	'299	'300	'301	'302	'303
'06	'354	'355	'356	'357	'358	'359	'360	'361	'363	'364
'07	'413	'414	'415	'417	'418	'419	'420	'422	'423	'424
'08	'472	'473	'475	'476	'478	'479	'480	'482	'483	'485
'09	'531	'533	'534	'536	'537	'539	'541	'542	'544	'545



	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1+a_{x+n}$										
15'9	6'195	5'917	5'638	5'357	5'075	4'790	4'505	4'217	3'927	3'636
'8	6'785	6'509	6'231	5'952	5'672	5'389	5'105	4'819	4'532	4'242
'7	7'375	7'101	6'825	6'548	6'269	5'988	5'706	5'422	5'136	4'848
'6	7'965	7'692	7'418	7'143	6'866	6'587	6'306	6'024	5'740	5'455
'5	8'555	8'284	8'012	7'738	7'463	7'186	6'907	6'627	6'344	6'061
'4	9'145	8'876	8'605	8'333	8'060	7'784	7'508	7'229	6'949	6'667
'3	9'735	9'467	9'199	8'929	8'657	8'383	8'108	7'831	7'553	7'273
'2	10'324	10'059	9'792	9'524	9'254	8'982	8'709	8'434	8'157	7'879
'1	10'914	10'651	10'386	10'119	9'851	9'581	9'309	9'036	8'761	8'485
'0	11'504	11'243	10'979	10'714	10'448	10'180	9'910	9'639	9'366	9'091
14'9	12'094	11'834	11'573	11'310	11'045	10'778	10'511	10'241	9'970	9'697
'8	12'684	12'426	12'166	11'905	11'642	11'377	11'111	10'843	10'574	10'303
'7	13'274	13'018	12'760	12'500	12'239	11'976	11'712	11'446	11'178	10'909
'6	13'864	13'609	13'353	13'095	12'836	12'575	12'312	12'048	11'782	11'515
'5	14'454	14'201	13'947	13'690	13'433	13'174	12'913	12'651	12'387	12'121
'4	15'044	14'793	14'540	14'286	14'030	13'772	13'514	13'253	12'991	12'727
'3	15'634	15'385	15'134	14'881	14'627	14'371	14'114	13'855	13'595	13'333
'2	16'224	15'976	15'727	15'476	15'224	14'970	14'715	14'458	14'199	13'939
'1	16'814	16'568	16'320	16'071	15'821	15'569	15'315	15'060	14'804	14'545
'0	17'404	17'160	16'914	16'667	16'418	16'168	15'916	15'663	15'408	15'152
13'9	17'994	17'751	17'507	17'262	17'015	16'766	16'517	16'265	16'012	15'758
'8	18'584	18'343	18'101	17'857	17'612	17'365	17'117	16'867	16'616	16'364
'7	19'174	18'935	18'694	18'452	18'209	17'964	17'718	17'470	17'221	16'970
'6	19'764	19'527	19'288	19'048	18'806	18'563	18'318	18'072	17'825	17'576
'5	20'354	20'118	19'881	19'643	19'403	19'162	18'919	18'675	18'429	18'182
'4	20'944	20'710	20'475	20'238	20'000	19'760	19'520	19'277	19'033	18'788
'3	21'534	21'302	21'068	20'833	20'597	20'359	20'120	19'880	19'637	19'394
'2	22'124	21'893	21'662	21'429	21'194	20'958	20'721	20'482	20'242	20'000
'1	22'714	22'485	22'255	22'024	21'791	21'557	21'321	21'084	20'846	20'606
'0	23'304	23'077	22'849	22'619	22'388	22'156	21'922	21'687	21'450	21'212
12'9	23'894	23'669	23'442	23'214	22'985	22'754	22'523	22'289	22'054	21'818
'8	24'484	24'260	24'036	23'810	23'582	23'353	23'123	22'892	22'659	22'424
'7	25'074	24'852	24'629	24'405	24'179	23'952	23'724	23'494	23'263	23'030
'6	25'664	25'444	25'223	25'000	24'776	24'551	24'324	24'096	23'867	23'636
'5	26'254	26'036	25'816	25'595	25'373	25'150	24'925	24'699	24'471	24'242
'4	26'844	26'627	26'409	26'190	25'970	25'749	25'526	25'301	25'076	24'848
'3	27'434	27'219	27'003	26'786	26'567	26'347	26'126	25'904	25'680	25'455
'2	28'024	27'811	27'596	27'381	27'164	26'946	26'727	26'506	26'284	26'061
'1	28'614	28'402	28'190	27'976	27'761	27'545	27'327	27'108	26'888	26'667
'0	29'204	28'994	28'783	28'571	28'358	28'144	27'928	27'711	27'492	27'273
11'9	29'794	29'586	29'377	29'167	28'955	28'743	28'529	28'313	28'097	27'879
'8	30'383	30'178	29'970	29'762	29'552	29'341	29'129	28'916	28'701	28'485
'7	30'973	30'769	30'564	30'357	30'149	29'940	29'730	29'518	29'305	29'091
'6	31'563	31'361	31'157	30'952	30'746	30'539	30'330	30'120	29'909	29'697
'5	32'153	31'953	31'751	31'548	31'343	31'138	30'931	30'723	30'514	30'303
'4	32'743	32'544	32'344	32'143	31'940	31'737	31'532	31'325	31'118	30'909
'3	33'333	33'136	32'938	32'738	32'537	32'335	32'132	31'928	31'722	31'515
'2	33'923	33'728	33'531	33'333	33'134	32'934	32'733	32'530	32'326	32'121
'1	34'513	34'320	34'125	33'929	33'731	33'533	33'333	33'133	32'931	32'727
'0	35'103	34'911	34'718	34'524	34'328	34'132	33'934	33'735	33'535	33'333

$1 + a_x$ 

16	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
10 <sup>9</sup>	35'693	35'503	35'312	35'119	34'925	34'731	34'535	34'337	34'139	33'939
·8	36'283	36'095	35'905	35'714	35'522	35'329	35'135	34'940	34'743	34'545
·7	36'873	36'686	36'499	36'310	36'119	35'928	35'736	35'542	35'347	35'152
·6	37'463	37'278	37'092	36'905	36'716	36'527	36'336	36'145	35'952	35'758
·5	38'053	37'870	37'685	37'500	37'313	37'126	36'937	36'747	36'556	36'364
·4	38'643	38'462	38'279	38'095	37'910	37'725	37'538	37'349	37'160	36'970
·3	39'233	39'053	38'872	38'690	38'507	38'323	38'138	37'952	37'764	37'576
·2	39'823	39'645	39'466	39'286	39'104	38'922	38'739	38'554	38'369	38'182
·1	40'413	40'237	40'059	39'881	39'701	39'521	39'339	39'157	38'973	38'788
·0	41'003	40'828	40'653	40'476	40'299	40'120	39'940	39'759	39'577	39'394
9 <sup>9</sup>	41'593	41'420	41'246	41'071	40'896	40'719	40'541	40'361	40'181	40'000
·8	42'183	42'012	41'840	41'667	41'493	41'317	41'141	40'964	40'785	40'606
·7	42'773	42'604	42'433	42'262	42'090	41'916	41'742	41'566	41'390	41'212
·6	43'363	43'195	43'027	42'857	42'687	42'515	42'342	42'169	41'994	41'818
·5	43'953	43'787	43'620	43'452	43'284	43'114	42'943	42'771	42'598	42'424
·4	44'543	44'379	44'214	44'048	43'881	43'713	43'544	43'373	43'202	43'030
·3	45'133	44'970	44'807	44'643	44'478	44'311	44'144	43'976	43'807	43'636
·2	45'723	45'562	45'401	45'238	45'075	44'910	44'745	44'578	44'411	44'242
·1	46'313	46'154	45'994	45'833	45'672	45'509	45'345	45'181	45'015	44'848
·0	46'903	46'746	46'588	46'429	46'269	46'108	45'946	45'783	45'619	45'455
8 <sup>9</sup>	47'493	47'337	47'181	47'024	46'866	46'707	46'547	46'386	46'224	46'061
·8	48'083	47'929	47'774	47'619	47'463	47'305	47'147	46'988	46'828	46'667
·7	48'673	48'521	48'368	48'214	48'060	47'904	47'748	47'590	47'432	47'273
·6	49'263	49'112	48'961	48'810	48'657	48'503	48'348	48'193	48'036	47'879
·5	49'853	49'704	49'555	49'405	49'254	49'102	48'949	48'795	48'640	48'485
·4	50'442	50'296	50'148	50'000	49'851	49'701	49'550	49'398	49'245	49'091
·3	51'032	50'888	50'742	50'595	50'448	50'299	50'150	50'000	49'849	49'697
·2	51'622	51'479	51'335	51'190	51'045	50'898	50'751	50'602	50'453	50'303
·1	52'212	52'071	51'929	51'786	51'642	51'497	51'351	51'205	51'057	50'909
·0	52'802	52'663	52'522	52'381	52'239	52'096	51'952	51'807	51'662	51'515
7 <sup>9</sup>	53'392	53'254	53'116	52'976	52'836	52'695	52'553	52'410	52'266	52'121
·8	53'982	53'846	53'709	53'571	53'433	53'293	53'153	53'012	52'870	52'727
·7	54'572	54'438	54'303	54'167	54'030	53'892	53'754	53'614	53'474	53'333
·6	55'162	55'030	54'896	54'762	54'627	54'491	54'354	54'217	54'079	53'939
·5	55'752	55'621	55'490	55'357	55'224	55'090	54'955	54'819	54'683	54'545
·4	56'342	56'213	56'083	55'952	55'821	55'689	55'556	55'422	55'287	55'152
·3	56'932	56'805	56'677	56'548	56'418	56'287	56'156	56'024	55'891	55'758
·2	57'522	57'396	57'270	57'143	57'015	56'886	56'757	56'627	56'495	56'364
·1	58'112	57'988	57'864	57'738	57'612	57'485	57'357	57'229	57'100	56'970
·0	58'702	58'580	58'457	58'333	58'209	58'084	57'958	57'831	57'704	57'576
·01	·059	·059	·059	·060	·060	·060	·060	·060	·060	·061
·02	·118	·118	·119	·119	·119	·120	·120	·120	·121	·121
·03	·177	·178	·178	·179	·179	·180	·180	·181	·181	·182
·04	·236	·237	·237	·238	·239	·240	·240	·241	·242	·242
·05	·295	·296	·297	·298	·299	·299	·300	·301	·302	·303
·06	·354	·355	·356	·357	·358	·359	·360	·361	·363	·364
·07	·413	·414	·415	·417	·418	·419	·420	·422	·423	·424
·08	·472	·473	·475	·476	·478	·479	·480	·482	·483	·485
·09	·531	·533	·534	·536	·537	·539	·541	·542	·544	·545

$1 + a_x$ 

16	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
6'9	59'292	59'172	59'050	58'929	58'806	58'683	58'559	58'434	58'308	58'182
'8	59'882	59'763	59'644	59'524	59'403	59'281	59'159	59'036	58'912	58'788
'7	60'472	60'355	60'237	60'119	60'000	59'880	59'760	59'639	59'517	59'394
'6	61'062	60'947	60'831	60'714	60'597	60'479	60'360	60'241	60'121	60'000
'5	61'652	61'538	61'424	61'310	61'194	61'078	60'961	60'843	60'725	60'606
'4	62'242	62'130	62'018	61'905	61'791	61'677	61'562	61'446	61'329	61'212
'3	62'832	62'722	62'611	62'500	62'388	62'275	62'162	62'048	61'934	61'818
'2	63'422	63'314	63'205	63'095	62'985	62'874	62'763	62'651	62'538	62'424
'1	64'012	63'905	63'798	63'690	63'582	63'473	63'363	63'253	63'142	63'030
'0	64'602	64'497	64'392	64'286	64'179	64'072	63'964	63'855	63'746	63'636
5'9	65'192	65'089	64'985	64'881	64'776	64'671	64'565	64'458	64'350	64'242
'8	65'782	65'680	65'579	65'476	65'373	65'269	65'165	65'060	64'955	64'848
'7	66'372	66'272	66'172	66'071	65'970	65'868	65'766	65'663	65'559	65'455
'6	66'962	66'864	66'766	66'667	66'567	66'467	66'366	66'265	66'163	66'061
'5	67'552	67'456	67'359	67'262	67'164	67'066	66'967	66'867	66'767	66'667
'4	68'142	68'047	67'953	67'857	67'761	67'665	67'568	67'470	67'372	67'273
'3	68'732	68'639	68'546	68'452	68'358	68'263	68'168	68'072	67'976	67'879
'2	69'322	69'231	69'139	69'048	68'955	68'862	68'769	68'675	68'580	68'485
'1	69'912	69'822	69'733	69'643	69'552	69'461	69'369	69'277	69'184	69'091
'0	70'501	70'414	70'326	70'238	70'149	70'060	69'970	69'880	69'789	69'697
4'9	71'091	71'006	70'920	70'833	70'746	70'659	70'571	70'482	70'393	70'303
'8	71'681	71'598	71'513	71'429	71'343	71'257	71'171	71'084	70'997	70'909
'7	72'271	72'189	72'107	72'024	71'940	71'856	71'772	71'687	71'601	71'515
'6	72'861	72'781	72'700	72'619	72'537	72'455	72'372	72'289	72'205	72'121
'5	73'451	73'373	73'294	73'214	73'134	73'054	72'973	72'892	72'810	72'727
'4	74'041	73'965	73'887	73'810	73'731	73'653	73'574	73'494	73'414	73'333
'3	74'631	74'556	74'481	74'405	74'328	74'251	74'174	74'096	74'018	73'939
'2	75'221	75'148	75'074	75'000	74'925	74'850	74'775	74'699	74'622	74'545
'1	75'811	75'740	75'668	75'595	75'522	75'449	75'375	75'301	75'227	75'152
'0	76'401	76'331	76'261	76'190	76'119	76'048	75'976	75'904	75'831	75'758
3'9	76'991	76'923	76'855	76'786	76'716	76'647	76'577	76'506	76'435	76'364
'8	77'581	77'515	77'448	77'381	77'313	77'246	77'177	77'108	77'039	76'970
'7	78'171	78'107	78'042	77'976	77'910	77'844	77'778	77'711	77'644	77'576
'6	78'761	78'698	78'635	78'571	78'507	78'443	78'378	78'313	78'248	78'182
'5	79'351	79'290	79'228	79'167	79'104	79'042	78'979	78'916	78'852	78'788
'4	79'941	79'882	79'822	79'762	79'701	79'641	79'580	79'518	79'456	79'394
'3	80'531	80'473	80'415	80'357	80'299	80'240	80'180	80'120	80'060	80'000
'2	81'121	81'065	81'009	80'952	80'896	80'838	80'781	80'723	80'665	80'606
'1	81'711	81'657	81'602	81'548	81'493	81'437	81'381	81'325	81'269	81'212
'0	82'301	82'249	82'196	82'143	82'090	82'036	81'982	81'928	81'873	81'818
2'9	82'891	82'840	82'789	82'738	82'687	82'635	82'583	82'530	82'477	82'424
'8	83'481	83'432	83'383	83'333	83'284	83'234	83'183	83'133	83'082	83'030
'7	84'071	84'024	83'976	83'929	83'881	83'832	83'784	83'735	83'686	83'636
'6	84'661	84'615	84'570	84'524	84'478	84'431	84'384	84'337	84'290	84'242
'5	85'251	85'207	85'163	85'119	85'075	85'030	84'985	84'940	84'894	84'848
'4	85'841	85'799	85'757	85'714	85'672	85'629	85'586	85'542	85'498	85'455
'3	86'431	86'391	86'350	86'310	86'269	86'228	86'186	86'145	86'103	86'061
'2	87'021	86'982	86'944	86'905	86'866	86'826	86'787	86'747	86'707	86'667
'1	87'611	87'574	87'537	87'500	87'463	87'425	87'387	87'349	87'311	87'273
'0	88'201	88'166	88'131	88'095	88'060	88'024	87'988	87'952	87'915	87'879



1 +  $a_x$

16	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
1+ $a_x$ )										
19	88'791	88'757	88'724	88'690	88'657	88'623	88'589	88'554	88'520	88'485
8	89'381	89'349	89'318	89'286	89'254	89'222	89'189	89'157	89'124	89'091
7	89'971	89'941	89'911	89'881	89'851	89'820	89'790	89'759	89'728	89'697
6	90'560	90'533	90'504	90'476	90'448	90'419	90'390	90'361	90'332	90'303
5	91'150	91'124	91'098	91'071	91'045	91'018	90'991	90'964	90'937	90'909
4	91'740	91'716	91'691	91'667	91'642	91'617	91'592	91'566	91'541	91'515
3	92'330	92'308	92'285	92'262	92'239	92'216	92'192	92'169	92'145	92'121
2	92'920	92'899	92'878	92'857	92'836	92'814	92'793	92'771	92'749	92'727
1	93'510	93'491	93'472	93'452	93'433	93'413	93'393	93'373	93'353	93'333
0	94'100	94'083	94'065	94'048	94'030	94'012	93'994	93'976	93'958	93'939
01	059	059	059	060	060	060	060	060	060	061
02	118	118	119	119	119	120	120	120	121	121
03	177	178	178	179	179	180	180	181	181	182
04	236	237	237	238	239	240	240	241	242	242
05	295	296	297	298	299	299	300	301	302	303
06	354	355	356	357	358	359	360	361	363	364
07	413	414	415	417	418	419	420	422	423	424
08	472	473	475	476	478	479	480	482	483	485
09	531	533	534	536	537	539	541	542	544	545

16	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
16'4	304	000	000	000	000	000	000	000	000	000
3	912	610	306	000	000	000	000	000	000	000
2	1'520	1'220	917	613	308	000	000	000	000	000
1	2'128	1'829	1'529	1'227	923	617	310	000	000	000
0	2'736	2'439	2'141	1'840	1'538	1'235	929	621	312	000
15'9	3'343	3'049	2'752	2'454	2'154	1'852	1'548	1'242	935	625
8	3'951	3'659	3'364	3'067	2'769	2'469	2'167	1'863	1'558	1'250
7	4'559	4'268	3'976	3'681	3'385	3'086	2'786	2'484	2'181	1'875
6	5'167	4'878	4'587	4'294	4'000	3'704	3'406	3'106	2'804	2'500
5	5'775	5'488	5'199	4'908	4'615	4'321	4'025	3'727	3'427	3'125
4	6'383	6'098	5'810	5'521	5'231	4'938	4'644	4'348	4'050	3'750
3	6'991	6'707	6'422	6'135	5'846	5'556	5'263	4'969	4'673	4'375
2	7'599	7'317	7'034	6'748	6'462	6'173	5'882	5'590	5'296	5'000
1	8'207	7'927	7'645	7'362	7'077	6'790	6'502	6'211	5'919	5'625
0	8'815	8'537	8'257	7'975	7'692	7'407	7'121	6'832	6'542	6'250
01	061	061	061	061	062	062	062	062	062	063
02	122	122	122	123	123	123	124	124	125	125
03	182	183	183	184	185	185	186	186	187	188
04	243	244	245	245	246	247	248	248	249	250
05	304	305	306	307	308	309	310	311	312	313
06	365	366	367	368	369	370	372	373	374	375
07	426	427	428	429	431	432	433	435	436	438
08	486	488	489	491	492	494	495	497	498	500
09	547	549	550	552	554	556	557	559	561	563



$1+a_x$ 

16	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
14'9	9'422	9'146	8'869	8'589	8'308	8'025	7'740	7'453	7'165	6'875
'8	10'030	9'756	9'480	9'202	8'923	8'642	8'359	8'075	7'788	7'500
'7	10'038	10'366	10'092	9'816	9'538	9'259	8'978	8'696	8'411	8'125
'6	11'246	10'976	10'703	10'429	10'154	9'877	9'598	9'317	9'034	8'750
'5	11'854	11'585	11'315	11'043	10'769	10'494	10'217	9'938	9'657	9'375
'4	12'462	12'195	11'927	11'656	11'385	11'111	10'836	10'559	10'280	10'000
'3	13'070	12'805	12'538	12'270	12'000	11'728	11'455	11'180	10'903	10'625
'2	13'678	13'415	13'150	12'883	12'615	12'346	12'074	11'801	11'526	11'250
'1	14'286	14'024	13'761	13'497	13'231	12'963	12'693	12'422	12'150	11'875
'0	14'894	14'634	14'373	14'110	13'846	13'580	13'313	13'043	12'773	12'500
13'9	15'502	15'244	14'985	14'724	14'462	14'198	13'932	13'665	13'396	13'125
'8	16'109	15'854	15'596	15'337	15'077	14'815	14'551	14'286	14'019	13'750
'7	16'717	16'463	16'208	15'951	15'692	15'432	15'170	14'907	14'642	14'375
'6	17'325	17'073	16'820	16'564	16'308	16'049	15'789	15'528	15'265	15'000
'5	17'933	17'683	17'431	17'178	16'923	16'667	16'409	16'149	15'888	15'625
'4	18'541	18'293	18'043	17'791	17'538	17'284	17'028	16'770	16'511	16'250
'3	19'149	18'902	18'654	18'405	18'154	17'901	17'647	17'391	17'134	16'875
'2	19'757	19'512	19'266	19'018	18'769	18'519	18'266	18'012	17'757	17'500
'1	20'365	20'122	19'878	19'632	19'385	19'136	18'885	18'634	18'380	18'125
'0	20'973	20'732	20'489	20'245	20'000	19'753	19'505	19'255	19'003	18'750
12'9	21'581	21'341	21'101	20'859	20'615	20'370	20'124	19'876	19'626	19'375
'8	22'188	21'951	21'713	21'472	21'231	20'988	20'743	20'497	20'249	20'000
'7	22'796	22'561	22'324	22'086	21'846	21'605	21'362	21'118	20'872	20'625
'6	23'404	23'171	22'936	22'699	22'462	22'222	21'981	21'739	21'495	21'250
'5	24'012	23'780	23'547	23'313	23'077	22'840	22'601	22'360	22'118	21'875
'4	24'620	24'390	24'159	23'926	23'692	23'457	23'220	22'981	22'741	22'500
'3	25'228	25'000	24'771	24'540	24'308	24'074	23'839	23'602	23'364	23'125
'2	25'836	25'610	25'382	25'153	24'923	24'691	24'458	24'224	23'988	23'750
'1	26'444	26'220	25'994	25'767	25'538	25'309	25'077	24'845	24'611	24'375
'0	27'052	26'829	26'606	26'380	26'154	25'926	25'697	25'466	25'234	25'000
11'9	27'660	27'439	27'217	26'994	26'769	26'543	26'316	26'087	25'857	25'625
'8	28'267	28'049	27'829	27'607	27'385	27'160	26'935	26'708	26'480	26'250
'7	28'875	28'659	28'440	28'221	28'000	27'778	27'554	27'329	27'103	26'875
'6	29'483	29'268	29'052	28'834	28'615	28'395	28'173	27'950	27'726	27'500
'5	30'091	29'878	29'664	29'448	29'231	29'012	28'793	28'571	28'349	28'125
'4	30'699	30'488	30'275	30'061	29'846	29'630	29'412	29'193	28'972	28'750
'3	31'307	31'098	30'887	30'675	30'462	30'247	30'031	29'814	29'595	29'375
'2	31'915	31'707	31'498	31'288	31'077	30'864	30'650	30'435	30'218	30'000
'1	32'523	32'317	32'110	31'902	31'692	31'481	31'269	31'056	30'841	30'625
'0	33'131	32'927	32'722	32'515	32'308	32'099	31'889	31'677	31'464	31'250
10'9	33'739	33'537	33'333	33'129	32'923	32'716	32'508	32'298	32'087	31'875
'8	34'347	34'146	33'945	33'742	33'538	33'333	33'127	32'919	32'710	32'500
'7	34'954	34'756	34'557	34'356	34'154	33'951	33'746	33'540	33'333	33'125
'6	35'562	35'366	35'168	34'969	34'769	34'568	34'365	34'161	33'956	33'750
'5	36'170	35'976	35'780	35'583	35'385	35'185	34'985	34'783	34'579	34'375
'4	36'778	36'585	36'391	36'196	36'000	35'802	35'604	35'404	35'202	35'000
'3	37'386	37'195	37'003	36'810	36'615	36'420	36'223	36'025	35'826	35'625
'2	37'994	37'805	37'615	37'423	37'231	37'037	36'842	36'646	36'449	36'250
'1	38'602	38'415	38'226	38'037	37'846	37'654	37'461	37'267	37'072	36'875
'0	39'210	39'024	38'838	38'650	38'462	38'272	38'080	37'888	37'695	37'500

$1 + a_x$ 

16	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+1}$										
9'9	39'818	39'634	39'450	39'264	39'077	38'889	38'700	38'509	38'318	38'125
'8	40'426	40'244	40'061	39'877	39'692	39'506	39'319	39'130	38'941	38'750
'7	41'033	40'854	40'673	40'491	40'308	40'123	39'938	39'752	39'564	39'375
'6	41'641	41'463	41'284	41'104	40'923	40'741	40'557	40'373	40'187	40'000
'5	42'249	42'073	41'896	41'718	41'538	41'358	41'176	40'994	40'810	40'625
'4	42'857	42'683	42'508	42'331	42'154	41'975	41'796	41'615	41'433	41'250
'3	43'465	43'293	43'119	42'945	42'769	42'593	42'415	42'236	42'056	41'875
'2	44'073	43'902	43'731	43'558	43'385	43'210	43'034	42'857	42'679	42'500
'1	44'681	44'512	44'343	44'172	44'000	43'827	43'653	43'478	43'302	43'125
'0	45'289	45'122	44'954	44'785	44'615	44'444	44'272	44'099	43'925	43'750
8'9	45'897	45'732	45'566	45'399	45'231	45'062	44'892	44'720	44'548	44'375
'8	46'505	46'341	46'177	46'012	45'846	45'679	45'511	45'342	45'171	45'000
'7	47'112	46'951	46'789	46'626	46'462	46'296	46'130	45'963	45'794	45'625
'6	47'720	47'561	47'401	47'239	47'077	46'914	46'749	46'584	46'417	46'250
'5	48'328	48'171	48'012	47'853	47'692	47'531	47'368	47'205	47'041	46'875
'4	48'936	48'780	48'624	48'466	48'308	48'148	47'988	47'826	47'664	47'500
'3	49'544	49'390	49'235	49'080	48'923	48'765	48'607	48'447	48'287	48'125
'2	50'152	50'000	49'847	49'693	49'538	49'383	49'226	49'068	48'910	48'750
'1	50'760	50'610	50'459	50'307	50'154	50'000	49'845	49'689	49'533	49'375
'0	51'368	51'220	51'070	50'920	50'769	50'617	50'464	50'311	50'156	50'000
7'9	51'976	51'829	51'682	51'534	51'385	51'235	51'084	50'932	50'779	50'625
'8	52'584	52'439	52'294	52'147	52'000	51'852	51'703	51'553	51'402	51'250
'7	53'191	53'049	52'905	52'761	52'615	52'469	52'322	52'174	52'025	51'875
'6	53'799	53'659	53'517	53'374	53'231	53'086	52'941	52'795	52'648	52'500
'5	54'407	54'268	54'128	53'988	53'846	53'704	53'560	53'416	53'271	53'125
'4	55'015	54'878	54'740	54'601	54'462	54'321	54'180	54'037	53'894	53'750
'3	55'623	55'488	55'352	55'215	55'077	54'938	54'799	54'658	54'517	54'375
'2	56'231	56'098	55'963	55'828	55'692	55'556	55'418	55'280	55'140	55'000
'1	56'839	56'707	56'575	56'442	56'308	56'173	56'037	55'901	55'763	55'625
'0	57'447	57'317	57'187	57'055	56'923	56'790	56'656	56'522	56'386	56'250
6'9	58'055	57'927	57'798	57'669	57'538	57'407	57'276	57'143	57'009	56'875
'8	58'663	58'537	58'410	58'282	58'154	58'025	57'895	57'764	57'632	57'500
'7	59'271	59'146	59'021	58'896	58'769	58'642	58'514	58'385	58'255	58'125
'6	59'878	59'756	59'633	59'509	59'385	59'259	59'133	59'006	58'879	58'750
'5	60'486	60'366	60'245	60'123	60'000	59'877	59'752	59'627	59'502	59'375
'4	61'094	60'976	60'856	60'736	60'615	60'494	60'372	60'248	60'125	60'000
'3	61'702	61'585	61'468	61'350	61'231	61'111	60'991	60'870	60'748	60'625
'2	62'310	62'195	62'080	61'963	61'846	61'728	61'610	61'491	61'371	61'250
'1	62'918	62'805	62'691	62'577	62'462	62'346	62'229	62'112	61'994	61'875
'0	63'526	63'415	63'303	63'190	63'077	62'963	62'848	62'733	62'617	62'500
'01	·061	·061	·061	·061	·062	·062	·062	·062	·062	·063
'02	·122	·122	·122	·123	·123	·123	·124	·124	·125	·125
'03	·182	·183	·183	·184	·185	·185	·186	·186	·187	·188
'04	·243	·244	·245	·245	·246	·247	·248	·248	·249	·250
'05	·304	·305	·306	·307	·308	·309	·310	·311	·312	·313
'06	·365	·366	·367	·368	·369	·370	·372	·373	·374	·375
'07	·426	·427	·428	·429	·431	·432	·433	·435	·436	·438
'08	·486	·488	·489	·491	·492	·494	·495	·497	·498	·500
'09	·547	·549	·550	·552	·554	·556	·557	·559	·561	·563

$1 + \alpha_x$ 

16	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
5'9	64'134	64'024	63'914	63'804	63'692	63'580	63'467	63'354	63'240	63'125
'8	64'742	64'634	64'526	64'417	64'308	64'198	64'087	63'975	63'863	63'750
'7	65'350	65'244	65'138	65'031	64'923	64'815	64'706	64'596	64'486	64'375
'6	65'957	65'854	65'749	65'644	65'538	65'432	65'325	65'217	65'109	65'000
'5	66'565	66'463	66'361	66'258	66'154	66'049	65'944	65'839	65'732	65'625
'4	67'173	67'073	66'972	66'871	66'769	66'667	66'563	66'460	66'355	66'250
'3	67'781	67'683	67'584	67'485	67'385	67'284	67'183	67'081	66'978	66'875
'2	68'389	68'293	68'196	68'098	68'000	67'901	67'802	67'702	67'601	67'500
'1	68'997	68'902	68'807	68'712	68'615	68'519	68'421	68'323	68'224	68'125
'0	69'605	69'512	69'419	69'325	69'231	69'136	69'040	68'944	68'847	68'750
4'9	70'213	70'122	70'031	69'939	69'846	69'753	69'659	69'565	69'470	69'375
'8	70'821	70'732	70'642	70'552	70'462	70'370	70'279	70'186	70'093	70'000
'7	71'429	71'341	71'254	71'166	71'077	70'988	70'898	70'807	70'717	70'625
'6	72'036	71'951	71'865	71'779	71'692	71'605	71'517	71'429	71'340	71'250
'5	72'644	72'561	72'477	72'393	72'308	72'222	72'136	72'050	71'963	71'875
'4	73'252	73'171	73'089	73'006	72'923	72'840	72'755	72'671	72'586	72'500
'3	73'860	73'780	73'700	73'620	73'538	73'457	73'375	73'292	73'209	73'125
'2	74'468	74'390	74'312	74'233	74'154	74'074	73'994	73'913	73'832	73'750
'1	75'076	75'000	74'924	74'847	74'769	74'691	74'613	74'534	74'455	74'375
'0	75'684	75'610	75'535	75'460	75'385	75'309	75'232	75'155	75'078	75'000
3'9	76'292	76'220	76'147	76'074	76'000	75'926	75'851	75'776	75'701	75'625
'8	76'900	76'829	76'758	76'687	76'615	76'543	76'471	76'398	76'324	76'250
'7	77'508	77'439	77'370	77'301	77'231	77'161	77'090	77'019	76'947	76'875
'6	78'115	78'049	77'982	77'914	77'846	77'778	77'709	77'640	77'570	77'500
'5	78'723	78'659	78'593	78'528	78'462	78'395	78'328	78'261	78'193	78'125
'4	79'331	79'268	79'205	79'141	79'077	79'012	78'947	78'882	78'816	78'750
'3	79'939	79'878	79'817	79'755	79'692	79'630	79'567	79'503	79'439	79'375
'2	80'547	80'488	80'428	80'368	80'308	80'247	80'186	80'124	80'062	80'000
'1	81'155	81'098	81'040	80'982	80'923	80'864	80'805	80'745	80'685	80'625
'0	81'763	81'707	81'651	81'595	81'538	81'481	81'424	81'366	81'308	81'250
2'9	82'371	82'317	82'263	82'209	82'154	82'099	82'043	81'988	81'931	81'875
'8	82'979	82'927	82'875	82'822	82'769	82'716	82'663	82'609	82'555	82'500
'7	83'587	83'537	83'486	83'436	83'385	83'333	83'282	83'230	83'178	83'125
'6	84'195	84'146	84'098	84'049	84'000	83'951	83'901	83'851	83'801	83'750
'5	84'802	84'756	84'709	84'663	84'615	84'568	84'520	84'472	84'424	84'375
'4	85'410	85'366	85'321	85'276	85'231	85'185	85'139	85'093	85'047	85'000
'3	86'018	85'976	85'933	85'890	85'846	85'802	85'759	85'714	85'670	85'625
'2	86'626	86'585	86'544	86'503	86'462	86'420	86'378	86'335	86'293	86'250
'1	87'234	87'195	87'156	87'117	87'077	87'037	86'997	86'957	86'916	86'875
'0	87'842	87'805	87'768	87'730	87'692	87'654	87'616	87'578	87'539	87'500
1'9	88'450	88'415	88'379	88'344	88'308	88'272	88'235	88'199	88'162	88'125
'8	89'058	89'024	88'991	88'957	88'923	88'889	88'854	88'820	88'785	88'750
'7	89'666	89'634	89'602	89'571	89'538	89'506	89'474	89'441	89'408	89'375
'6	90'274	90'244	90'214	90'184	90'154	90'123	90'093	90'062	90'031	90'000
'5	90'881	90'854	90'826	90'798	90'769	90'741	90'712	90'683	90'654	90'625
'4	91'489	91'463	91'437	91'411	91'385	91'358	91'331	91'304	91'277	91'250
'3	92'097	92'073	92'049	92'025	92'000	91'975	91'950	91'925	91'900	91'875
'2	92'705	92'683	92'661	92'638	92'615	92'593	92'570	92'547	92'523	92'500
'1	93'313	93'293	93'272	93'252	93'231	93'210	93'189	93'168	93'146	93'125
'0	93'921	93'902	93'884	93'865	93'846	93'827	93'808	93'789	93'769	93'750



$1 + a_x$ 

16	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
'01	·061	·061	·061	·061	·062	·062	·062	·062	·062	·063
'02	·122	·122	·122	·123	·123	·123	·124	·124	·125	·125
'03	·182	·183	·183	·184	·185	·185	·186	·186	·187	·188
'04	·243	·244	·245	·245	·246	·247	·248	·248	·249	·250
'05	·304	·305	·306	·307	·308	·309	·310	·311	·312	·313
'06	·365	·366	·367	·368	·369	·370	·372	·373	·374	·375
'07	·426	·427	·428	·429	·431	·432	·433	·435	·436	·438
'08	·486	·488	·489	·491	·492	·494	·495	·497	·498	·500
'09	·547	·549	·550	·552	·554	·556	·557	·559	·561	·563

15	'95	'90	'85	'80	'75	'70	'65	'60	'55	50
15'9	·313	·000	·000	·000	·000	·000	·000	·000	·000	·000
'8	·940	·629	·315	·000	·000	·000	·000	·000	·000	·000
'7	1'567	1'258	·946	·633	·317	·000	·000	·000	·000	·000
'6	2'194	1'887	1'577	1'266	·952	·637	·319	·000	·000	·000
'5	2'821	2'516	2'208	1'899	1'587	1'274	·958	·641	·322	·000
'4	3'448	3'145	2'839	2'532	2'222	1'911	1'597	1'282	·965	·645
'3	4'075	3'774	3'470	3'165	2'857	2'548	2'236	1'923	1'608	1'290
'2	4'702	4'403	4'101	3'797	3'492	3'185	2'875	2'564	2'251	1'935
'1	5'329	5'031	4'732	4'430	4'127	3'822	3'514	3'205	2'894	2'581
'0	5'956	5'660	5'363	5'063	4'762	4'459	4'153	3'846	3'537	3'226
14'9	6'583	6'289	5'994	5'696	5'397	5'096	4'792	4'487	4'180	3'871
'8	7'210	6'918	6'625	6'329	6'032	5'732	5'431	5'128	4'823	4'516
'7	7'837	7'547	7'256	6'962	6'667	6'369	6'070	5'769	5'466	5'161
'6	8'464	8'176	7'886	7'595	7'302	7'006	6'709	6'410	6'109	5'806
'5	9'091	8'805	8'517	8'228	7'937	7'643	7'348	7'051	6'752	6'452
'4	9'718	9'434	9'148	8'861	8'571	8'280	7'987	7'692	7'395	7'097
'3	10'345	10'063	9'779	9'494	9'206	8'917	8'626	8'333	8'039	7'742
'2	10'972	10'692	10'410	10'127	9'841	9'554	9'265	8'974	8'682	8'387
'1	11'599	11'321	11'041	10'759	10'476	10'191	9'904	9'615	9'325	9'032
'0	12'226	11'950	11'672	11'392	11'111	10'828	10'543	10'256	9'968	9'677
13'9	12'853	12'579	12'303	12'025	11'746	11'465	11'182	10'897	10'611	10'323
'8	13'480	13'208	12'934	12'658	12'381	12'102	11'821	11'538	11'254	10'968
'7	14'107	13'836	13'565	13'291	13'016	12'739	12'460	12'179	11'897	11'613
'6	14'734	14'465	14'196	13'924	13'651	13'376	13'099	12'821	12'540	12'258
'5	15'361	15'094	14'826	14'557	14'280	14'013	13'738	13'462	13'183	12'903
'01	·063	·063	·063	·063	·063	·064	·064	·064	·064	·065
'02	·125	·126	·126	·127	·127	·127	·128	·128	·129	·129
'03	·188	·189	·189	·190	·190	·191	·192	·192	·193	·194
'04	·251	·252	·252	·253	·254	·255	·256	·256	·257	·258
'05	·313	·314	·315	·316	·317	·318	·319	·321	·322	·323
'06	·376	·377	·379	·380	·381	·382	·383	·385	·386	·387
'07	·439	·440	·442	·443	·444	·446	·447	·449	·450	·452
'08	·502	·503	·505	·506	·508	·510	·511	·513	·514	·516
'09	·564	·566	·568	·570	·571	·573	·575	·577	·579	·581



$1 + a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x-4}$										
13'4	15'087	15'723	15'457	15'190	14'921	14'650	14'377	14'103	13'826	13'548
3	16'614	16'352	16'088	15'823	15'556	15'287	15'016	14'744	14'469	14'194
2	17'241	16'981	16'719	16'456	16'190	15'924	15'655	15'385	15'113	14'839
1	17'868	17'610	17'350	17'089	16'825	16'561	16'294	16'026	15'756	15'484
0	18'495	18'239	17'981	17'722	17'460	17'197	16'933	16'667	16'399	16'129
12'9	19'122	18'868	18'612	18'354	18'095	17'834	17'572	17'308	17'042	16'774
8	19'749	19'497	19'243	18'987	18'730	18'471	18'211	17'949	17'685	17'419
7	20'376	20'126	19'874	19'620	19'365	19'108	18'850	18'590	18'328	18'065
6	21'003	20'755	20'505	20'253	20'000	19'745	19'489	19'231	18'971	18'710
5	21'630	21'384	21'136	20'886	20'635	20'382	20'128	19'872	19'614	19'355
4	22'257	22'013	21'767	21'519	21'270	21'019	20'767	20'513	20'257	20'000
3	22'884	22'642	22'397	22'152	21'905	21'656	21'406	21'154	20'900	20'645
2	23'511	23'270	23'028	22'785	22'540	22'293	22'045	21'795	21'543	21'290
1	24'138	23'899	23'659	23'418	23'175	22'930	22'684	22'436	22'186	21'935
0	24'765	24'528	24'290	24'051	23'810	23'567	23'323	23'077	22'830	22'581
11'9	25'392	25'157	24'921	24'684	24'444	24'204	23'962	23'718	23'473	23'226
8	26'019	25'786	25'552	25'316	25'079	24'841	24'601	24'359	24'116	23'871
7	26'646	26'415	26'183	25'949	25'714	25'478	25'240	25'000	24'759	24'516
6	27'273	27'044	26'814	26'582	26'349	26'115	25'879	25'641	25'402	25'161
5	27'900	27'673	27'445	27'215	26'984	26'752	26'518	26'282	26'045	25'806
4	28'527	28'302	28'076	27'848	27'619	27'389	27'157	26'923	26'688	26'452
3	29'154	28'931	28'707	28'481	28'254	28'025	27'796	27'564	27'331	27'097
2	29'781	29'560	29'338	29'114	28'889	28'662	28'435	28'205	27'974	27'742
1	30'408	30'189	29'968	29'747	29'524	29'299	29'073	28'846	28'617	28'387
0	31'034	30'818	30'599	30'380	30'159	29'936	29'712	29'487	29'260	29'032
10'9	31'661	31'447	31'230	31'013	30'794	30'573	30'351	30'128	29'904	29'677
8	32'288	32'075	31'861	31'646	31'429	31'210	30'990	30'769	30'547	30'323
7	32'915	32'704	32'492	32'278	32'063	31'847	31'629	31'410	31'190	30'968
6	33'542	33'333	33'123	32'911	32'698	32'484	32'268	32'051	31'833	31'613
5	34'169	33'962	33'754	33'544	33'333	33'121	32'907	32'692	32'476	32'258
4	34'796	34'591	34'385	34'177	33'968	33'758	33'546	33'333	33'119	32'903
3	35'423	35'220	35'016	34'810	34'603	34'395	34'185	33'974	33'762	33'548
2	36'050	35'849	35'647	35'443	35'238	35'032	34'824	34'615	34'405	34'194
1	36'677	36'478	36'278	36'076	35'873	35'669	35'463	35'256	35'048	34'839
0	37'304	37'107	36'909	36'709	36'508	36'306	36'102	35'897	35'691	35'484
9'9	37'931	37'736	37'539	37'342	37'143	36'943	36'741	36'538	36'334	36'129
8	38'558	38'365	38'170	37'975	37'778	37'580	37'380	37'179	36'977	36'774
7	39'185	38'994	38'801	38'608	38'413	38'217	38'019	37'821	37'621	37'419
6	39'812	39'623	39'432	39'241	39'048	38'854	38'658	38'462	38'264	38'065
5	40'439	40'252	40'063	39'873	39'683	39'490	39'297	39'103	38'907	38'710
4	41'066	40'881	40'694	40'506	40'317	40'127	39'936	39'744	39'550	39'355
3	41'693	41'509	41'325	41'139	40'952	40'764	40'575	40'385	40'193	40'000
2	42'320	42'138	41'956	41'772	41'587	41'401	41'214	41'026	40'836	40'645
1	42'947	42'767	42'587	42'405	42'222	42'038	41'853	41'667	41'479	41'290
0	43'574	43'396	43'218	43'038	42'857	42'675	42'492	42'308	42'122	41'935
8'9	44'201	44'025	43'849	43'671	43'492	43'312	43'131	42'949	42'765	42'581
8	44'828	44'654	44'479	44'304	44'127	43'949	43'770	43'590	43'408	43'226
7	45'455	45'283	45'110	44'937	44'762	44'586	44'409	44'231	44'051	43'871
6	46'082	45'912	45'741	45'570	45'397	45'223	45'048	44'872	44'695	44'516
5	46'708	46'541	46'372	46'203	46'032	45'860	45'687	45'513	45'338	45'161

$1 + a_r$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{r+n}$										
8·4	47'335	47'170	47'003	46'835	46'667	46'497	46'326	46'154	45'981	45'806
·3	47'962	47'799	47'634	47'468	47'302	47'134	46'965	46'795	46'624	46'452
·2	48'589	48'428	48'265	48'101	47'937	47'771	47'604	47'436	47'267	47'097
·1	49'216	49'057	48'896	48'734	48'571	48'408	48'243	48'077	47'910	47'742
·0	49'843	49'686	49'527	49'367	49'206	49'045	48'882	48'718	48'553	48'387
7·9	50'470	50'314	50'158	50'000	49'841	49'682	49'521	49'359	49'196	49'032
·8	51'097	50'943	50'789	50'633	50'476	50'318	50'160	50'000	49'839	49'677
·7	51'724	51'572	51'420	51'266	51'111	50'955	50'799	50'641	50'482	50'323
·6	52'351	52'201	52'050	51'899	51'746	51'592	51'438	51'282	51'125	50'968
·5	52'978	52'830	52'681	52'532	52'381	52'229	52'077	51'923	51'768	51'613
·4	53'605	53'459	53'312	53'165	53'016	52'866	52'716	52'564	52'412	52'258
·3	54'232	54'088	53'943	53'797	53'651	53'503	53'355	53'205	53'055	52'903
·2	54'859	54'717	54'574	54'430	54'286	54'140	53'994	53'846	53'698	53'548
·1	55'486	55'346	55'205	55'063	54'921	54'777	54'633	54'487	54'341	54'194
·0	56'113	55'975	55'836	55'696	55'556	55'414	55'272	55'128	54'984	54'839
6·9	56'740	56'604	56'467	56'329	56'190	56'051	55'911	55'769	55'627	55'484
·8	57'367	57'233	57'098	56'962	56'825	56'688	56'550	56'410	56'270	56'129
·7	57'994	57'862	57'729	57'595	57'460	57'325	57'188	57'051	56'913	56'774
·6	58'621	58'491	58'360	58'228	58'095	57'962	57'827	57'692	57'556	57'419
·5	59'248	59'119	58'991	58'861	58'730	58'599	58'466	58'333	58'199	58'065
·4	59'875	59'748	59'621	59'494	59'365	59'236	59'105	58'974	58'842	58'710
·3	60'502	60'377	60'252	60'127	60'000	59'873	59'744	59'615	59'486	59'355
·2	61'129	61'006	60'883	60'759	60'635	60'510	60'383	60'256	60'129	60'000
·1	61'755	61'635	61'514	61'392	61'270	61'146	61'022	60'897	60'772	60'645
·0	62'382	62'264	62'145	62'025	61'905	61'783	61'661	61'538	61'415	61'290
5·9	63'009	62'893	62'776	62'658	62'540	62'420	62'300	62'179	62'058	61'935
·8	63'636	63'522	63'407	63'291	63'175	63'057	62'939	62'821	62'701	62'581
·7	64'263	64'151	64'038	63'924	63'810	63'694	63'578	63'462	63'344	63'226
·6	64'890	64'780	64'669	64'557	64'444	64'331	64'217	64'103	63'987	63'871
·5	65'517	65'409	65'300	65'190	65'079	64'968	64'856	64'744	64'630	64'516
·4	66'144	66'038	65'931	65'823	65'714	65'605	65'495	65'385	65'273	65'161
·3	66'771	66'667	66'562	66'456	66'349	66'242	66'134	66'026	65'916	65'806
·2	67'398	67'296	67'192	67'089	66'984	66'879	66'773	66'667	66'559	66'452
·1	68'025	67'925	67'823	67'722	67'619	67'516	67'412	67'308	67'203	67'097
·0	68'652	68'553	68'454	68'354	68'254	68'153	68'051	67'949	67'846	67'742
4·9	69'279	69'182	69'085	68'987	68'889	68'790	68'690	68'590	68'489	68'387
·8	69'906	69'811	69'716	69'620	69'524	69'427	69'329	69'231	69'132	69'032
·7	70'533	70'440	70'347	70'253	70'159	70'064	69'968	69'872	69'775	69'677
·6	71'160	71'069	70'978	70'886	70'794	70'701	70'607	70'513	70'418	70'323
·5	71'787	71'698	71'609	71'519	71'429	71'338	71'246	71'154	71'061	70'968
·01	·063	·063	·063	·063	·063	·061	·061	·061	·061	·065
·02	·125	·126	·126	·127	·127	·127	·128	·128	·129	·129
·03	·188	·189	·189	·190	·190	·191	·192	·192	·193	·194
·04	·251	·252	·252	·253	·251	·255	·256	·256	·257	·258
·05	·313	·314	·315	·316	·317	·318	·319	·321	·322	·323
·06	·376	·377	·379	·380	·381	·382	·383	·385	·386	·387
·07	·439	·440	·442	·443	·441	·446	·447	·449	·450	·452
·08	·502	·503	·505	·506	·508	·510	·511	·513	·514	·516
·09	·564	·566	·568	·570	·571	·573	·575	·577	·579	·581

$1 + a_x$ 

15	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$L + a_{x+i}$										
4.4	72'414	72'327	72'240	72'152	72'063	71'975	71'885	71'795	71'704	71'613
3	73'041	72'956	72'871	72'785	72'698	72'611	72'524	72'436	72'347	72'258
2	73'668	73'585	73'502	73'418	73'333	73'248	73'163	73'077	72'990	72'903
1	74'295	74'214	74'132	74'051	73'968	73'885	73'802	73'718	73'633	73'548
0	74'922	74'843	74'763	74'684	74'603	74'522	74'441	74'359	74'277	74'194
3.9	75'549	75'472	75'394	75'316	75'238	75'159	75'080	75'000	74'920	74'839
8	76'176	76'101	76'025	75'949	75'873	75'796	75'719	75'641	75'563	75'484
7	76'803	76'730	76'656	76'582	76'508	76'433	76'358	76'282	76'206	76'129
6	77'429	77'358	77'287	77'215	77'143	77'070	76'997	76'923	76'849	76'774
5	78'056	77'987	77'918	77'848	77'778	77'707	77'636	77'564	77'492	77'419
4	78'683	78'616	78'549	78'481	78'413	78'344	78'275	78'205	78'135	78'065
3	79'310	79'245	79'180	79'114	79'048	78'981	78'914	78'846	78'778	78'710
2	79'937	79'874	79'811	79'747	79'683	79'618	79'553	79'487	79'421	79'355
1	80'564	80'503	80'442	80'380	80'317	80'255	80'192	80'128	80'064	80'000
0	81'191	81'132	81'073	81'013	80'952	80'892	80'831	80'769	80'707	80'645
2.9	81'818	81'761	81'703	81'646	81'587	81'529	81'470	81'410	81'350	81'290
8	82'445	82'390	82'334	82'278	82'222	82'166	82'109	82'051	81'994	81'935
7	83'072	83'019	82'965	82'911	82'857	82'803	82'748	82'692	82'637	82'581
6	83'699	83'648	83'596	83'544	83'492	83'439	83'387	83'333	83'280	83'226
5	84'326	84'277	84'227	84'177	84'127	84'076	84'026	83'974	83'923	83'871
4	84'953	84'906	84'858	84'810	84'762	84'713	84'665	84'615	84'566	84'516
3	85'580	85'535	85'489	85'443	85'397	85'350	85'304	85'256	85'209	85'161
2	86'207	86'164	86'120	86'076	86'032	85'987	85'942	85'897	85'852	85'806
1	86'834	86'792	86'751	86'709	86'667	86'624	86'581	86'538	86'495	86'452
0	87'461	87'421	87'382	87'342	87'302	87'261	87'220	87'179	87'138	87'097
1.9	88'088	88'050	88'013	87'975	87'937	87'898	87'859	87'821	87'781	87'742
8	88'715	88'679	88'644	88'608	88'571	88'535	88'498	88'462	88'424	88'387
7	89'342	89'308	89'274	89'241	89'206	89'172	89'137	89'103	89'068	89'032
6	89'969	89'937	89'905	89'873	89'841	89'809	89'776	89'744	89'711	89'677
5	90'596	90'566	90'536	90'506	90'476	90'446	90'415	90'385	90'354	90'323
4	91'223	91'195	91'167	91'139	91'111	91'083	91'054	91'026	90'997	90'968
3	91'850	91'824	91'798	91'772	91'746	91'720	91'693	91'667	91'640	91'613
2	92'476	92'453	92'429	92'405	92'381	92'357	92'332	92'308	92'283	92'258
1	93'103	93'082	93'060	93'038	93'016	92'994	92'971	92'949	92'926	92'903
0	93'730	93'711	93'691	93'671	93'651	93'631	93'610	93'590	93'569	93'548
.01	.063	.063	.063	.063	.063	.061	.061	.061	.061	.065
.02	.125	.126	.126	.127	.127	.127	.128	.128	.129	.129
.03	.188	.189	.189	.190	.190	.191	.192	.192	.193	.194
.04	.251	.252	.252	.253	.254	.255	.256	.256	.257	.258
.05	.313	.314	.315	.316	.317	.318	.319	.321	.322	.323
.06	.376	.377	.379	.380	.381	.382	.383	.385	.386	.387
.07	.439	.440	.442	.443	.444	.446	.447	.449	.450	.452
.08	.502	.503	.505	.506	.508	.510	.511	.513	.514	.516
.09	.564	.566	.568	.570	.571	.573	.575	.577	.579	.581



$$1 + a_x$$

15	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
15'4	'324	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	'971	'649	'326	'000	'000	'000	'000	'000	'000	'000
'2	1'618	1'299	'977	'654	'328	'000	'000	'000	'000	'000
'1	2'265	1'948	1'629	1'307	'984	'658	'330	'000	'000	'000
'0	2'913	2'597	2'280	1'961	1'639	1'316	'990	'662	'332	'000
14'9	3'560	3'247	2'932	2'614	2'295	1'974	1'650	1'325	'997	'667
'8	4'207	3'896	3'583	3'268	2'951	2'632	2'310	1'987	1'661	1'333
'7	4'854	4'545	4'235	3'922	3'607	3'289	2'970	2'649	2'326	2'000
'6	5'502	5'195	4'886	4'575	4'262	3'947	3'630	3'311	2'990	2'667
'5	6'149	5'844	5'537	5'229	4'918	4'605	4'290	3'974	3'654	3'333
'4	6'796	6'494	6'189	5'882	5'574	5'263	4'950	4'636	4'319	4'000
'3	7'443	7'143	6'840	6'536	6'230	5'921	5'611	5'298	4'983	4'667
'2	8'091	7'792	7'492	7'190	6'885	6'579	6'271	5'960	5'648	5'333
'1	8'738	8'442	8'143	7'843	7'541	7'237	6'931	6'623	6'312	6'000
'0	9'385	9'091	8'795	8'497	8'197	7'895	7'591	7'285	6'977	6'667
13'9	10'032	9'740	9'446	9'150	8'852	8'553	8'251	7'947	7'641	7'333
'8	10'680	10'390	10'098	9'804	9'508	9'211	8'911	8'609	8'306	8'000
'7	11'327	11'039	10'749	10'458	10'164	9'868	9'571	9'272	8'970	8'667
'6	11'974	11'688	11'401	11'111	10'820	10'526	10'231	9'934	9'635	9'333
'5	12'621	12'338	12'052	11'765	11'475	11'184	10'891	10'596	10'299	10'000
'4	13'269	12'987	12'704	12'418	12'131	11'842	11'551	11'258	10'963	10'667
'3	13'916	13'636	13'355	13'072	12'787	12'500	12'211	11'921	11'628	11'333
'2	14'563	14'286	14'007	13'725	13'443	13'158	12'871	12'583	12'292	12'000
'1	15'210	14'935	14'658	14'379	14'098	13'816	13'531	13'245	12'957	12'667
'0	15'858	15'584	15'309	15'033	14'754	14'474	14'191	13'907	13'621	13'333
12'9	16'505	16'234	15'961	15'686	15'410	15'132	14'851	14'570	14'286	14'000
'8	17'152	16'883	16'612	16'340	16'066	15'789	15'512	15'232	14'950	14'667
'7	17'799	17'532	17'264	16'993	16'721	16'447	16'172	15'894	15'615	15'333
'6	18'447	18'182	17'915	17'647	17'377	17'105	16'832	16'556	16'279	16'000
'5	19'094	18'831	18'567	18'301	18'033	17'763	17'492	17'219	16'944	16'667
'4	19'741	19'481	19'218	18'954	18'689	18'421	18'152	17'881	17'608	17'333
'3	20'388	20'130	19'870	19'608	19'344	19'079	18'812	18'543	18'272	18'000
'2	21'036	20'779	20'521	20'261	20'000	19'737	19'472	19'205	18'937	18'667
'1	21'683	21'429	21'173	20'915	20'656	20'395	20'132	19'868	19'601	19'333
'0	22'330	22'078	21'824	21'569	21'311	21'053	20'792	20'530	20'266	20'000
11'9	22'977	22'727	22'476	22'222	21'967	21'711	21'452	21'192	20'930	20'667
'8	23'625	23'377	23'127	22'876	22'623	22'368	22'112	21'854	21'595	21'333
'7	24'272	24'026	23'779	23'529	23'279	23'026	22'772	22'517	22'259	22'000
'6	24'919	24'675	24'430	24'183	23'934	23'684	23'432	23'179	22'924	22'667
'5	25'566	25'325	25'081	24'837	24'590	24'342	24'092	23'841	23'588	23'333
'01	'065	'065	'065	'065	'066	'066	'066	'066	'066	'067
'02	'129	'130	'130	'131	'131	'132	'132	'132	'133	'133
'03	'194	'195	'195	'196	'197	'197	'198	'199	'199	'200
'04	'259	'260	'261	'261	'262	'263	'264	'265	'266	'267
'05	'324	'325	'326	'327	'328	'329	'330	'331	'332	'333
'06	'388	'390	'391	'392	'393	'395	'396	'397	'399	'400
'07	'453	'455	'456	'458	'459	'461	'462	'464	'465	'467
'08	'518	'519	'521	'523	'525	'526	'528	'530	'532	'533
'09	'583	'584	'586	'588	'590	'592	'594	'596	'598	'600



$1+a_x$ 

15	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x+n}$										
11.4	26'214	25'974	25'733	25'490	25'246	25'000	24'752	24'503	24'252	24'000
'3	26'861	26'623	26'384	26'144	25'902	25'658	25'413	25'166	24'917	24'667
'2	27'508	27'273	27'036	26'797	26'557	26'316	26'073	25'828	25'581	25'333
'1	28'155	27'922	27'687	27'451	27'213	26'974	26'733	26'490	26'246	26'000
'0	28'803	28'571	28'339	28'105	27'869	27'632	27'393	27'152	26'910	26'667
10.9	29'450	29'221	28'990	28'758	28'525	28'289	28'053	27'815	27'575	27'333
'8	30'097	29'870	29'642	29'412	29'180	28'947	28'713	28'477	28'239	28'000
'7	30'744	30'519	30'293	30'065	29'836	29'605	29'373	29'139	28'904	28'667
'6	31'392	31'169	30'945	30'719	30'492	30'263	30'033	29'801	29'568	29'333
'5	32'039	31'818	31'596	31'373	31'148	30'921	30'693	30'464	30'233	30'000
'4	32'686	32'468	32'248	32'026	31'803	31'579	31'353	31'126	30'897	30'667
'3	33'333	33'117	32'899	32'680	32'459	32'237	32'013	31'788	31'561	31'333
'2	33'981	33'766	33'550	33'333	33'115	32'895	32'673	32'450	32'226	32'000
'1	34'628	34'416	34'202	33'987	33'770	33'553	33'333	33'113	32'890	32'667
'0	35'275	35'065	34'853	34'641	34'426	34'211	33'993	33'775	33'555	33'333
9.9	35'922	35'714	35'505	35'294	35'082	34'868	34'653	34'437	34'219	34'000
'8	36'570	36'364	36'156	35'948	35'738	35'526	35'314	35'099	34'884	34'667
'7	37'217	37'013	36'808	36'601	36'393	36'184	35'974	35'762	35'548	35'333
'6	37'864	37'662	37'459	37'255	37'049	36'842	36'634	36'424	36'213	36'000
'5	38'511	38'312	38'111	37'908	37'705	37'500	37'294	37'086	36'877	36'667
'4	39'159	38'961	38'762	38'562	38'361	38'158	37'954	37'748	37'542	37'333
'3	39'806	39'610	39'414	39'216	39'016	38'816	38'614	38'411	38'206	38'000
'2	40'453	40'260	40'065	39'869	39'672	39'474	39'274	39'073	38'870	38'667
'1	41'100	40'909	40'717	40'523	40'328	40'132	39'934	39'735	39'535	39'333
'0	41'748	41'558	41'368	41'176	40'984	40'789	40'594	40'397	40'199	40'000
8.9	42'395	42'208	42'020	41'830	41'639	41'447	41'254	41'060	40'864	40'667
'8	43'042	42'857	42'671	42'484	42'295	42'105	41'914	41'722	41'528	41'333
'7	43'689	43'506	43'322	43'137	42'951	42'763	42'574	42'384	42'193	42'000
'6	44'337	44'156	43'974	43'791	43'607	43'421	43'234	43'046	42'857	42'667
'5	44'984	44'805	44'625	44'444	44'262	44'079	43'894	43'709	43'522	43'333
'4	45'631	45'455	45'277	45'098	44'918	44'737	44'554	44'371	44'186	44'000
'3	46'278	46'104	45'928	45'752	45'574	45'395	45'215	45'033	44'850	44'667
'2	46'926	46'753	46'580	46'405	46'230	46'053	45'875	45'695	45'515	45'333
'1	47'573	47'403	47'231	47'059	46'885	46'711	46'535	46'358	46'179	46'000
'0	48'220	48'052	47'883	47'712	47'541	47'368	47'195	47'020	46'844	46'667
7.9	48'867	48'701	48'534	48'366	48'197	48'026	47'855	47'682	47'508	47'333
'8	49'515	49'351	49'186	49'020	48'852	48'684	48'515	48'344	48'173	48'000
'7	50'162	50'000	49'837	49'673	49'508	49'342	49'175	49'007	48'837	48'667
'6	50'809	50'649	50'489	50'327	50'164	50'000	49'835	49'669	49'502	49'333
'5	51'456	51'299	51'140	50'980	50'820	50'658	50'495	50'331	50'166	50'000
'4	52'104	51'948	51'792	51'634	51'475	51'316	51'155	50'993	50'831	50'667
'3	52'751	52'597	52'443	52'288	52'131	51'974	51'815	51'656	51'495	51'333
'2	53'398	53'247	53'094	52'941	52'787	52'632	52'475	52'318	52'159	52'000
'1	54'045	53'896	53'746	53'595	53'443	53'289	53'135	52'980	52'824	52'667
'0	54'693	54'545	54'397	54'248	54'098	53'947	53'795	53'642	53'488	53'333
6.9	55'340	55'195	55'049	54'902	54'754	54'605	54'455	54'305	54'153	54'000
'8	55'987	55'844	55'700	55'556	55'410	55'263	55'116	54'967	54'817	54'667
'7	56'634	56'494	56'352	56'209	56'066	55'921	55'776	55'629	55'482	55'333
'6	57'282	57'143	57'003	56'863	56'721	56'579	56'436	56'291	56'146	56'000
'5	57'929	57'792	57'655	57'516	57'377	57'237	57'096	56'954	56'811	56'667

15	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
6'4	58'576	58'442	58'306	58'170	58'033	57'895	57'756	57'616	57'475	57'333
'3	59'223	59'091	58'958	58'824	58'689	58'553	58'416	58'278	58'140	58'000
'2	59'871	59'740	59'609	59'477	59'344	59'211	59'076	58'940	58'804	58'667
'1	60'518	60'390	60'261	60'131	60'000	59'868	59'736	59'603	59'468	59'333
'0	61'165	61'039	60'912	60'784	60'656	60'526	60'396	60'265	60'133	60'000
5'9	61'812	61'688	61'564	61'438	61'311	61'184	61'056	60'927	60'797	60'667
'8	62'460	62'338	62'215	62'092	61'967	61'842	61'716	61'589	61'462	61'333
'7	63'107	62'987	62'866	62'745	62'623	62'500	62'376	62'252	62'126	62'000
'6	63'754	63'636	63'518	63'399	63'279	63'158	63'036	62'914	62'791	62'667
'5	64'401	64'286	64'169	64'052	63'934	63'816	63'696	63'576	63'455	63'333
'4	65'049	64'935	64'821	64'706	64'590	64'474	64'356	64'238	64'120	64'000
'3	65'696	65'584	65'472	65'359	65'246	65'132	65'017	64'901	64'784	64'667
'2	66'343	66'234	66'124	66'013	65'902	65'789	65'677	65'563	65'449	65'333
'1	66'990	66'883	66'775	66'667	66'557	66'447	66'337	66'225	66'113	66'000
'0	67'638	67'532	67'427	67'320	67'213	67'105	66'997	66'887	66'777	66'667
4'9	68'285	68'182	68'078	67'974	67'869	67'763	67'657	67'550	67'442	67'333
'8	68'932	68'831	68'730	68'627	68'525	68'421	68'317	68'212	68'106	68'000
'7	69'579	69'481	69'381	69'281	69'180	69'079	68'977	68'874	68'771	68'667
'6	70'227	70'130	70'033	69'935	69'836	69'737	69'637	69'536	69'435	69'333
'5	70'874	70'779	70'684	70'588	70'492	70'395	70'297	70'199	70'100	70'000
'4	71'521	71'429	71'336	71'242	71'148	71'053	70'957	70'861	70'764	70'667
'3	72'168	72'078	71'987	71'895	71'803	71'711	71'617	71'523	71'429	71'333
'2	72'816	72'727	72'638	72'549	72'459	72'368	72'277	72'185	72'093	72'000
'1	73'463	73'377	73'290	73'203	73'115	73'026	72'937	72'848	72'757	72'667
'0	74'110	74'026	73'941	73'856	73'770	73'684	73'597	73'510	73'422	73'333
3'9	74'757	74'675	74'593	74'510	74'426	74'342	74'257	74'172	74'086	74'000
'8	75'405	75'325	75'244	75'163	75'082	75'000	74'917	74'834	74'751	74'667
'7	76'052	75'974	75'896	75'817	75'738	75'658	75'578	75'497	75'415	75'333
'6	76'699	76'623	76'547	76'471	76'393	76'316	76'238	76'159	76'080	76'000
'5	77'346	77'273	77'199	77'124	77'049	76'974	76'898	76'821	76'744	76'667
'4	77'994	77'922	77'850	77'778	77'705	77'632	77'558	77'483	77'409	77'333
'3	78'641	78'571	78'502	78'431	78'361	78'289	78'218	78'146	78'073	78'000
'2	79'288	79'221	79'153	79'085	79'016	78'947	78'878	78'808	78'738	78'667
'1	79'935	79'870	79'805	79'739	79'672	79'605	79'538	79'470	79'402	79'333
'0	80'583	80'519	80'456	80'392	80'328	80'263	80'198	80'132	80'066	80'000
2'9	81'230	81'169	81'107	81'046	80'984	80'921	80'858	80'795	80'731	80'667
'8	81'877	81'818	81'759	81'699	81'639	81'579	81'518	81'457	81'395	81'333
'7	82'524	82'468	82'410	82'353	82'295	82'237	82'178	82'119	82'060	82'000
'6	83'172	83'117	83'062	83'007	82'951	82'895	82'838	82'781	82'724	82'667
'5	83'819	83'766	83'713	83'660	83'607	83'553	83'498	83'444	83'389	83'333
'01	·065	·065	·065	·065	·066	·066	·066	·066	·066	·067
'02	·129	·130	·130	·131	·131	·132	·132	·132	·133	·133
'03	·194	·195	·195	·196	·197	·197	·198	·199	·199	·200
'04	·259	·260	·261	·261	·262	·263	·264	·265	·266	·267
'05	·324	·325	·326	·327	·328	·329	·330	·331	·332	·333
'06	·388	·390	·391	·392	·393	·395	·396	·397	·399	·400
'07	·453	·455	·456	·458	·459	·461	·462	·464	·465	·467
'08	·518	·519	·521	·523	·525	·526	·528	·530	·532	·533
'09	·583	·584	·586	·588	·590	·592	·594	·596	·598	·600

$1 + a_x$ 

15	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
2'4	84'466	84'416	84'365	84'314	84'262	84'211	84'158	84'106	84'053	84'000
'3	85'113	85'065	85'016	84'967	84'918	84'868	84'818	84'768	84'718	84'667
'2	85'761	85'714	85'668	85'621	85'574	85'526	85'479	85'430	85'382	85'333
'1	86'408	86'364	86'319	86'275	86'230	86'184	86'139	86'093	86'047	86'000
'0	87'055	87'013	86'971	86'928	86'885	86'842	86'799	86'755	86'711	86'667
1'9	87'702	87'662	87'622	87'582	87'541	87'500	87'459	87'417	87'375	87'333
'8	88'350	88'312	88'274	88'235	88'197	88'158	88'119	88'079	88'040	88'000
'7	88'997	88'961	88'925	88'889	88'852	88'816	88'779	88'742	88'704	88'667
'6	89'644	89'610	89'577	89'542	89'508	89'474	89'439	89'404	89'369	89'333
'5	90'291	90'260	90'228	90'196	90'164	90'132	90'099	90'066	90'033	90'000
'4	90'939	90'909	90'879	90'850	90'820	90'789	90'759	90'728	90'698	90'667
'3	91'586	91'558	91'531	91'503	91'475	91'447	91'419	91'391	91'362	91'333
'2	92'233	92'208	92'182	92'157	92'131	92'105	92'079	92'053	92'027	92'000
'1	92'880	92'857	92'834	92'810	92'787	92'763	92'739	92'715	92'691	92'667
'0	93'528	93'506	93'485	93'464	93'443	93'421	93'399	93'377	93'355	93'333
'01	'065	'065	'065	'065	'066	'066	'066	'066	'066	'067
'02	'129	'130	'130	'131	'131	'132	'132	'132	'133	'133
'03	'194	'195	'195	'196	'197	'197	'198	'199	'199	'200
'04	'259	'260	'261	'261	'262	'263	'264	'265	'266	'267
'05	'324	'325	'326	'327	'328	'329	'330	'331	'332	'333
'06	'388	'390	'391	'392	'393	'395	'396	'397	'399	'400
'07	'453	'455	'456	'458	'459	'461	'462	'464	'465	'467
'08	'518	'519	'521	'523	'525	'526	'528	'530	'532	'533
'09	'583	'584	'586	'588	'590	'592	'594	'596	'598	'600
14	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
14'9	'334	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	1'003	'671	'337	'000	'000	'000	'000	'000	'000	'000
'7	1'672	1'342	1'010	'676	'339	'000	'000	'000	'000	'000
'6	2'341	2'013	1'684	1'351	1'017	'680	'341	'000	'000	'000
'5	3'010	2'685	2'357	2'027	1'695	1'361	1'024	'685	'344	'000
'4	3'679	3'356	3'030	2'703	2'373	2'041	1'706	1'370	1'031	'690
'3	4'348	4'027	3'704	3'378	3'051	2'721	2'389	2'055	1'718	1'379
'2	5'017	4'698	4'377	4'054	3'729	3'401	3'072	2'740	2'405	2'069
'1	5'686	5'369	5'051	4'730	4'407	4'082	3'754	3'425	3'093	2'759
'0	6'355	6'040	5'724	5'405	5'085	4'762	4'437	4'110	3'780	3'448
13'9	7'023	6'711	6'397	6'081	5'763	5'442	5'119	4'795	4'467	4'138
'8	7'692	7'383	7'071	6'757	6'441	6'122	5'802	5'479	5'155	4'828
'7	8'361	8'054	7'744	7'432	7'119	6'803	6'485	6'164	5'842	5'517
'6	9'030	8'725	8'418	8'108	7'797	7'483	7'167	6'849	6'529	6'207
'5	9'699	9'396	9'091	8'784	8'475	8'163	7'850	7'534	7'216	6'897
'4	10'368	10'067	9'764	9'459	9'153	8'844	8'532	8'219	7'904	7'586
'3	11'037	10'738	10'438	10'135	9'831	9'524	9'215	8'904	8'591	8'276
'2	11'706	11'409	11'111	10'811	10'508	10'204	9'898	9'589	9'278	8'966
'1	12'375	12'081	11'785	11'486	11'186	10'884	10'580	10'274	9'966	9'655
'0	13'043	12'752	12'458	12'162	11'864	11'565	11'263	10'959	10'653	10'345



$1+a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1+a_{x+n}$										
12'9	13'712	13'423	13'131	12'838	12'542	12'245	11'945	11'644	11'340	11'034
'8	14'381	14'094	13'805	13'514	13'220	12'925	12'628	12'329	12'027	11'724
'7	15'050	14'765	14'478	14'189	13'898	13'605	13'311	13'014	12'715	12'414
'6	15'719	15'436	15'152	14'865	14'576	14'286	13'993	13'699	13'402	13'103
'5	16'388	16'107	15'825	15'541	15'254	14'966	14'676	14'384	14'089	13'793
'4	17'057	16'779	16'498	16'216	15'932	15'646	15'358	15'068	14'777	14'483
'3	17'726	17'450	17'172	16'892	16'610	16'327	16'041	15'753	15'464	15'172
'2	18'395	18'121	17'845	17'568	17'288	17'007	16'724	16'438	16'151	15'862
'1	19'064	18'792	18'519	18'243	17'966	17'687	17'406	17'123	16'838	16'552
'0	19'732	19'463	19'192	18'919	18'644	18'367	18'089	17'808	17'526	17'241
11'9	20'401	20'134	19'865	19'595	19'322	19'048	18'771	18'493	18'213	17'931
'8	21'070	20'805	20'539	20'270	20'000	19'728	19'454	19'178	18'900	18'621
'7	21'739	21'477	21'212	20'946	20'678	20'408	20'137	19'863	19'588	19'310
'6	22'408	22'148	21'886	21'622	21'356	21'088	20'819	20'548	20'275	20'000
'5	23'077	22'819	22'559	22'297	22'034	21'769	21'502	21'233	20'962	20'690
'4	23'746	23'490	23'232	22'973	22'712	22'449	22'184	21'918	21'649	21'379
'3	24'415	24'161	23'906	23'649	23'390	23'129	22'867	22'603	22'337	22'069
'2	25'084	24'832	24'579	24'324	24'068	23'810	23'549	23'288	23'024	22'759
'1	25'753	25'503	25'253	25'000	24'746	24'490	24'232	23'973	23'711	23'448
'0	26'421	26'174	25'926	25'676	25'424	25'170	24'915	24'658	24'399	24'138
10'9	27'090	26'846	26'599	26'351	26'102	25'850	25'597	25'342	25'086	24'828
'8	27'759	27'517	27'273	27'027	26'780	26'531	26'280	26'027	25'773	25'517
'7	28'428	28'188	27'946	27'703	27'458	27'211	26'962	26'712	26'460	26'207
'6	29'097	28'859	28'620	28'378	28'136	27'891	27'645	27'397	27'148	26'897
'5	29'766	29'530	29'293	29'054	28'814	28'571	28'328	28'082	27'835	27'586
'4	30'435	30'201	29'966	29'730	29'492	29'252	29'010	28'767	28'522	28'276
'3	31'104	30'872	30'640	30'405	30'169	29'932	29'693	29'452	29'210	28'966
'2	31'773	31'544	31'313	31'081	30'847	30'612	30'375	30'137	29'897	29'655
'1	32'441	32'215	31'987	31'757	31'525	31'293	31'058	30'822	30'584	30'345
'0	33'110	32'886	32'660	32'432	32'203	31'973	31'741	31'507	31'271	31'034
9'9	33'779	33'557	33'333	33'108	32'881	32'653	32'423	32'192	31'959	31'724
'8	34'448	34'228	34'007	33'784	33'559	33'333	33'106	32'877	32'646	32'414
'7	35'117	34'899	34'680	34'459	34'237	34'014	33'788	33'562	33'333	33'103
'6	35'786	35'570	35'354	35'135	34'915	34'694	34'471	34'247	34'021	33'793
'5	36'455	36'242	36'027	35'811	35'593	35'374	35'154	34'932	34'708	34'483
'4	37'124	36'913	36'700	36'486	36'271	36'054	35'836	35'616	35'395	35'172
'3	37'793	37'584	37'374	37'162	36'949	36'735	36'519	36'301	36'082	35'862
'2	38'462	38'255	38'047	37'838	37'627	37'415	37'201	36'986	36'770	36'552
'1	39'130	38'926	38'721	38'514	38'305	38'095	37'884	37'671	37'457	37'241
'0	39'799	39'597	39'394	39'189	38'983	38'776	38'567	38'356	38'144	37'931
'01	'067	'067	'067	'068	'068	'068	'068	'068	'069	'069
'02	'131	'131	'135	'135	'136	'136	'137	'137	'137	'138
'03	'201	'201	'202	'203	'203	'204	'205	'205	'206	'207
'04	'263	'268	'269	'270	'271	'272	'273	'274	'275	'276
'05	'331	'336	'337	'338	'339	'340	'341	'342	'344	'345
'06	'401	'403	'404	'405	'407	'408	'410	'411	'412	'414
'07	'468	'470	'471	'473	'475	'476	'478	'479	'481	'483
'08	'535	'537	'539	'541	'542	'544	'546	'548	'550	'552
'09	'602	'604	'606	'608	'610	'612	'614	'616	'619	'621



$1 + a_x$ 

14	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
8.9	40.468	40.268	40.067	39.865	39.661	39.456	39.249	39.041	38.832	38.621
.8	41.137	40.940	40.741	40.541	40.339	40.136	39.932	39.726	39.519	39.310
.7	41.806	41.611	41.414	41.216	41.017	40.816	40.614	40.411	40.206	40.000
.6	42.475	42.282	42.088	41.892	41.695	41.497	41.297	41.096	40.893	40.690
.5	43.144	42.953	42.761	42.568	42.373	42.177	41.980	41.781	41.581	41.379
.4	43.813	43.624	43.434	43.243	43.051	42.857	42.662	42.466	42.268	42.069
.3	44.482	44.295	44.108	43.919	43.729	43.537	43.345	43.151	42.955	42.759
.2	45.151	44.966	44.781	44.595	44.407	44.218	44.027	43.836	43.643	43.448
.1	45.819	45.638	45.455	45.270	45.085	44.898	44.710	44.521	44.330	44.138
.0	46.488	46.309	46.128	45.946	45.763	45.578	45.392	45.205	45.017	44.828
7.9	47.157	46.980	46.801	46.622	46.441	46.259	46.075	45.890	45.704	45.517
.8	47.826	47.651	47.475	47.297	47.119	46.939	46.758	46.575	46.392	46.207
.7	48.495	48.322	48.148	47.973	47.797	47.619	47.440	47.260	47.079	46.897
.6	49.164	48.993	48.822	48.649	48.475	48.299	48.123	47.945	47.766	47.586
.5	49.833	49.664	49.495	49.324	49.153	48.980	48.805	48.630	48.454	48.276
.4	50.502	50.336	50.168	50.000	49.831	49.660	49.488	49.315	49.141	48.966
.3	51.171	51.007	50.842	50.676	50.508	50.340	50.171	50.000	49.828	49.655
.2	51.839	51.678	51.515	51.351	51.186	51.020	50.853	50.685	50.515	50.345
.1	52.508	52.349	52.189	52.027	51.864	51.701	51.536	51.370	51.203	51.034
.0	53.177	53.020	52.862	52.703	52.542	52.381	52.218	52.055	51.890	51.724
6.9	53.846	53.691	53.535	53.378	53.220	53.061	52.901	52.740	52.577	52.414
.8	54.515	54.362	54.209	54.054	53.898	53.741	53.584	53.425	53.265	53.103
.7	55.184	55.034	54.882	54.730	54.576	54.422	54.266	54.110	53.952	53.793
.6	55.853	55.705	55.556	55.405	55.254	55.102	54.949	54.795	54.639	54.483
.5	56.522	56.376	56.229	56.081	55.932	55.782	55.631	55.479	55.326	55.172
.4	57.191	57.047	56.902	56.757	56.610	56.463	56.314	56.164	56.014	55.862
.3	57.860	57.718	57.576	57.432	57.288	57.143	56.997	56.849	56.701	56.552
.2	58.528	58.389	58.249	58.108	57.966	57.823	57.679	57.534	57.388	57.241
.1	59.197	59.060	58.923	58.784	58.644	58.503	58.362	58.219	58.076	57.931
.0	59.866	59.732	59.596	59.459	59.322	59.184	59.044	58.904	58.763	58.621
5.9	60.535	60.403	60.269	60.135	60.000	59.864	59.727	59.589	59.450	59.310
.8	61.204	61.074	60.943	60.811	60.678	60.544	60.410	60.274	60.137	60.000
.7	61.873	61.745	61.616	61.486	61.356	61.224	61.092	60.959	60.825	60.690
.6	62.542	62.416	62.290	62.162	62.034	61.905	61.775	61.644	61.512	61.379
.5	63.211	63.087	62.963	62.838	62.712	62.585	62.457	62.329	62.199	62.069
.4	63.880	63.758	63.636	63.514	63.390	63.265	63.140	63.014	62.887	62.759
.3	64.548	64.430	64.310	64.189	64.068	63.946	63.823	63.699	63.574	63.448
.2	65.217	65.101	64.983	64.865	64.746	64.626	64.505	64.384	64.261	64.138
.1	65.886	65.772	65.657	65.541	65.424	65.306	65.188	65.068	64.948	64.828
.0	66.555	66.443	66.330	66.216	66.102	65.986	65.870	65.753	65.636	65.517
4.9	67.224	67.114	67.003	66.892	66.780	66.667	66.553	66.438	66.323	66.207
.8	67.893	67.785	67.677	67.568	67.458	67.347	67.235	67.123	67.010	66.897
.7	68.562	68.456	68.350	68.243	68.136	68.027	67.918	67.808	67.698	67.586
.6	69.231	69.128	69.024	68.919	68.814	68.707	68.601	68.493	68.385	68.276
.5	69.900	69.799	69.697	69.595	69.492	69.388	69.283	69.178	69.072	68.966

$1 + a_x$ 

14	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
4·4	70·569	70·470	70·370	70·270	70·169	70·068	69·966	69·863	69·759	69·655
·3	71·237	71·141	71·044	70·946	70·847	70·748	70·648	70·548	70·447	70·345
·2	71·906	71·812	71·717	71·622	71·525	71·429	71·331	71·233	71·134	71·034
·1	72·575	72·483	72·391	72·297	72·203	72·109	72·014	71·918	71·821	71·724
·0	73·244	73·154	73·064	72·973	72·881	72·789	72·696	72·603	72·509	72·414
3·9	73·913	73·825	73·737	73·649	73·559	73·469	73·379	73·288	73·196	73·103
·8	74·582	74·497	74·411	74·324	74·237	74·150	74·061	73·973	73·883	73·793
·7	75·251	75·168	75·084	75·000	74·915	74·830	74·744	74·658	74·570	74·483
·6	75·920	75·839	75·758	75·676	75·593	75·510	75·427	75·342	75·258	75·172
·5	76·589	76·510	76·431	76·351	76·271	76·190	76·109	76·027	75·945	75·862
·4	77·258	77·181	77·104	77·027	76·949	76·871	76·792	76·712	76·632	76·552
·3	77·926	77·852	77·778	77·703	77·627	77·551	77·474	77·397	77·320	77·241
·2	78·595	78·523	78·451	78·378	78·305	78·231	78·157	78·082	78·007	77·931
·1	79·264	79·195	79·125	79·054	78·983	78·912	78·840	78·767	78·694	78·621
·0	79·933	79·866	79·798	79·730	79·661	79·592	79·522	79·452	79·381	79·310
2·9	80·602	80·537	80·471	80·405	80·339	80·272	80·205	80·137	80·069	80·000
·8	81·271	81·208	81·145	81·081	81·017	80·952	80·887	80·822	80·756	80·690
·7	81·940	81·879	81·818	81·757	81·695	81·633	81·570	81·507	81·443	81·379
·6	82·609	82·550	82·492	82·432	82·373	82·313	82·253	82·192	82·131	82·069
·5	83·278	83·221	83·165	83·108	83·051	82·993	82·935	82·877	82·818	82·759
·4	83·946	83·893	83·838	83·784	83·729	83·673	83·618	83·562	83·505	83·448
·3	84·615	84·564	84·512	84·459	84·407	84·354	84·300	84·247	84·192	84·138
·2	85·284	85·235	85·185	85·135	85·085	85·034	84·983	84·932	84·880	84·828
·1	85·953	85·906	85·859	85·811	85·763	85·714	85·666	85·616	85·567	85·517
·0	86·622	86·577	86·532	86·486	86·441	86·395	86·348	86·301	86·254	86·207
1·9	87·291	87·248	87·205	87·162	87·119	87·075	87·031	86·986	86·942	86·897
·8	87·960	87·919	87·879	87·838	87·797	87·755	87·713	87·671	87·629	87·586
·7	88·629	88·591	88·552	88·514	88·475	88·435	88·396	88·356	88·316	88·276
·6	89·298	89·262	89·226	89·189	89·153	89·116	89·079	89·041	89·003	88·966
·5	89·967	89·933	89·899	89·865	89·831	89·796	89·761	89·726	89·691	89·655
·4	90·635	90·604	90·572	90·541	90·508	90·476	90·444	90·411	90·378	90·345
·3	91·304	91·275	91·246	91·216	91·186	91·156	91·126	91·096	91·065	91·034
·2	91·973	91·946	91·919	91·892	91·864	91·837	91·809	91·781	91·753	91·724
·1	92·642	92·617	92·593	92·568	92·542	92·517	92·491	92·466	92·440	92·414
·0	93·311	93·289	93·266	93·243	93·220	93·197	93·174	93·151	93·127	93·103
·01	·067	·067	·067	·068	·068	·068	·068	·068	·069	·069
·02	·134	·134	·135	·135	·136	·136	·137	·137	·137	·138
·03	·201	·201	·202	·203	·203	·204	·205	·205	·206	·207
·04	·268	·268	·269	·270	·271	·272	·273	·274	·275	·276
·05	·334	·336	·337	·338	·339	·340	·341	·342	·344	·345
·06	·401	·403	·404	·405	·407	·408	·410	·411	·412	·414
·07	·468	·470	·471	·473	·475	·476	·478	·479	·481	·483
·08	·535	·537	·539	·541	·542	·544	·546	·548	·550	·552
·09	·602	·604	·606	·608	·610	·612	·614	·616	·619	·621

$1 + a_x$ 

14	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
14.4	'346	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	1'038	'694	'348	'000	'000	'000	'000	'000	'000	'000
'2	1'730	1'389	1'045	'699	'351	'000	'000	'000	'000	'000
'1	2'422	2'083	1'742	1'399	1'053	'704	'353	'000	'000	'000
'0	3'114	2'778	2'439	2'098	1'754	1'408	1'060	'709	'356	'000
13.9	3'806	3'472	3'136	2'797	2'456	2'113	1'767	1'418	1'068	'714
'8	4'498	4'167	3'833	3'497	3'158	2'817	2'473	2'128	1'779	1'429
'7	5'190	4'861	4'530	4'196	3'860	3'521	3'180	2'837	2'491	2'143
'6	5'882	5'556	5'226	4'895	4'561	4'225	3'887	3'546	3'203	2'857
'5	6'574	6'250	5'923	5'594	5'263	4'930	4'594	4'255	3'915	3'571
'4	7'266	6'944	6'620	6'294	5'965	5'634	5'300	4'965	4'626	4'286
'3	7'958	7'639	7'317	6'993	6'667	6'338	6'007	5'674	5'338	5'000
'2	8'651	8'333	8'014	7'692	7'368	7'042	6'714	6'383	6'050	5'714
'1	9'343	9'028	8'711	8'392	8'070	7'746	7'420	7'092	6'762	6'429
'0	10'035	9'722	9'408	9'091	8'772	8'451	8'127	7'801	7'473	7'143
12.9	10'727	10'417	10'105	9'790	9'474	9'155	8'834	8'511	8'185	7'857
'8	11'419	11'111	10'801	10'490	10'175	9'859	9'541	9'220	8'897	8'571
'7	12'111	11'806	11'498	11'189	10'877	10'563	10'247	9'929	9'609	9'286
'6	12'803	12'500	12'195	11'888	11'579	11'268	10'954	10'638	10'320	10'000
'5	13'495	13'194	12'892	12'587	12'281	11'972	11'661	11'348	11'032	10'714
'4	14'187	13'889	13'589	13'287	12'982	12'676	12'367	12'057	11'744	11'429
'3	14'879	14'583	14'286	13'986	13'684	13'380	13'074	12'766	12'456	12'143
'2	15'571	15'278	14'983	14'685	14'386	14'085	13'781	13'475	13'167	12'857
'1	16'263	15'972	15'679	15'385	15'088	14'789	14'488	14'184	13'879	13'571
'0	16'955	16'667	16'376	16'084	15'789	15'493	15'194	14'894	14'591	14'286
11.9	17'647	17'361	17'073	16'783	16'491	16'197	15'901	15'603	15'302	15'000
'8	18'339	18'056	17'770	17'483	17'193	16'901	16'608	16'312	16'014	15'714
'7	19'031	18'750	18'467	18'182	17'895	17'606	17'314	17'021	16'726	16'429
'6	19'723	19'444	19'164	18'881	18'596	18'310	18'021	17'730	17'438	17'143
'5	20'415	20'139	19'861	19'580	19'298	19'014	18'728	18'440	18'149	17'857
'4	21'107	20'833	20'557	20'280	20'000	19'718	19'435	19'149	18'861	18'571
'3	21'799	21'528	21'254	20'979	20'702	20'423	20'141	19'858	19'573	19'286
'2	22'491	22'222	21'951	21'678	21'404	21'127	20'848	20'567	20'285	20'000
'1	23'183	22'917	22'648	22'378	22'105	21'831	21'555	21'277	20'996	20'714
'0	23'875	23'611	23'345	23'077	22'807	22'535	22'261	21'986	21'708	21'429
10.9	24'567	24'306	24'042	23'776	23'509	23'239	22'968	22'695	22'420	22'143
'8	25'260	25'000	24'739	24'476	24'211	23'944	23'675	23'404	23'132	22'857
'7	25'952	25'694	25'436	25'175	24'912	24'648	24'382	24'113	23'843	23'571
'6	26'644	26'389	26'132	25'874	25'614	25'352	25'088	24'823	24'555	24'286
'5	27'336	27'083	26'829	26'573	26'316	26'056	25'795	25'532	25'267	25'000
'4	28'028	27'778	27'526	27'273	27'018	26'761	26'502	26'241	25'979	25'714
'3	28'720	28'472	28'223	27'972	27'719	27'465	27'208	26'950	26'690	26'429
'2	29'412	29'167	28'920	28'671	28'421	28'169	27'915	27'660	27'402	27'143
'1	30'104	29'861	29'617	29'371	29'123	28'873	28'622	28'369	28'114	27'857
'0	30'796	30'556	30'314	30'070	29'825	29'577	29'329	29'078	28'826	28'571
9.9	31'488	31'250	31'010	30'769	30'526	30'282	30'035	29'787	29'537	29'286
'8	32'180	31'944	31'707	31'468	31'228	30'986	30'742	30'496	30'249	30'000
'7	32'872	32'639	32'404	32'168	31'930	31'690	31'449	31'206	30'961	30'714
'6	33'564	33'333	33'101	32'867	32'632	32'394	32'155	31'915	31'673	31'429
'5	34'256	34'028	33'798	33'566	33'333	33'099	32'862	32'624	32'384	32'143



$1 + a_x$ 

14	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
9'4	34'948	34'722	34'495	34'266	34'035	33'803	33'569	33'333	33'096	32'857
'3	35'640	35'417	35'192	34'965	34'737	34'507	34'276	34'043	33'808	33'571
'2	36'332	36'111	35'889	35'664	35'439	35'211	34'982	34'752	34'520	34'286
'1	37'024	36'806	36'585	36'364	36'140	35'915	35'689	35'461	35'231	35'000
'0	37'716	37'500	37'282	37'063	36'842	36'620	36'396	36'170	35'943	35'714
8'9	38'408	38'194	37'979	37'762	37'544	37'324	37'102	36'879	36'655	36'429
'8	39'100	38'889	38'676	38'462	38'246	38'028	37'809	37'589	37'367	37'143
'7	39'792	39'583	39'373	39'161	38'947	38'732	38'516	38'298	38'078	37'857
'6	40'484	40'278	40'070	39'860	39'649	39'437	39'223	39'007	38'790	38'571
'5	41'176	40'972	40'767	40'559	40'351	40'141	39'929	39'716	39'502	39'286
'4	41'869	41'667	41'463	41'259	41'053	40'845	40'636	40'426	40'214	40'000
'3	42'561	42'361	42'160	41'958	41'754	41'549	41'343	41'135	40'925	40'714
'2	43'253	43'056	42'857	42'657	42'456	42'254	42'049	41'844	41'637	41'429
'1	43'945	43'750	43'554	43'357	43'158	42'958	42'756	42'553	42'349	42'143
'0	44'637	44'444	44'251	44'056	43'860	43'662	43'463	43'262	43'060	42'857
7'9	45'329	45'139	44'948	44'755	44'561	44'366	44'170	43'972	43'772	43'571
'8	46'021	45'833	45'645	45'455	45'263	45'070	44'876	44'681	44'484	44'286
'7	46'713	46'528	46'341	46'154	45'965	45'775	45'583	45'390	45'196	45'000
'6	47'405	47'222	47'038	46'853	46'667	46'479	46'290	46'099	45'907	45'714
'5	48'097	47'917	47'735	47'552	47'368	47'183	46'996	46'809	46'619	46'429
'4	48'789	48'611	48'432	48'252	48'070	47'887	47'703	47'518	47'331	47'143
'3	49'481	49'306	49'129	48'951	48'772	48'592	48'410	48'227	48'043	47'857
'2	50'173	50'000	49'826	49'650	49'474	49'296	49'117	48'936	48'754	48'571
'1	50'865	50'694	50'523	50'350	50'175	50'000	49'823	49'645	49'466	49'286
'0	51'557	51'389	51'220	51'049	50'877	50'704	50'530	50'355	50'178	50'000
6'9	52'249	52'083	51'916	51'748	51'579	51'408	51'237	51'064	50'890	50'714
'8	52'941	52'778	52'613	52'448	52'281	52'113	51'943	51'773	51'601	51'429
'7	53'633	53'472	53'310	53'147	52'982	52'817	52'650	52'482	52'313	52'143
'6	54'325	54'167	54'007	53'846	53'684	53'521	53'357	53'191	53'025	52'857
'5	55'017	54'861	54'704	54'545	54'386	54'225	54'064	53'901	53'737	53'571
'4	55'709	55'556	55'401	55'245	55'088	54'930	54'770	54'610	54'448	54'286
'3	56'401	56'250	56'098	55'944	55'789	55'634	55'477	55'319	55'160	55'000
'2	57'093	56'944	56'794	56'643	56'491	56'338	56'184	56'028	55'872	55'714
'1	57'785	57'639	57'491	57'343	57'193	57'042	56'890	56'738	56'584	56'429
'0	58'478	58'333	58'188	58'042	57'895	57'746	57'597	57'447	57'295	57'143
5'9	59'170	59'028	58'885	58'741	58'596	58'451	58'304	58'156	58'007	57'857
'8	59'862	59'722	59'582	59'441	59'298	59'155	59'011	58'865	58'719	58'571
'7	60'554	60'417	60'279	60'140	60'000	59'859	59'717	59'574	59'431	59'286
'6	61'246	61'111	60'976	60'839	60'702	60'563	60'424	60'284	60'142	60'000
'5	61'938	61'806	61'672	61'538	61'404	61'268	61'131	60'993	60'854	60'714
'01	·069	·069	·070	·070	·070	·070	·071	·071	·071	·071
'02	·138	·139	·139	·140	·140	·141	·141	·142	·142	·143
'03	·208	·208	·209	·210	·211	·211	·212	·213	·214	·214
'04	·277	·278	·279	·280	·281	·282	·283	·284	·285	·286
'05	·346	·347	·348	·350	·351	·352	·353	·355	·356	·357
'06	·415	·417	·418	·420	·421	·423	·424	·426	·427	·429
'07	·484	·486	·488	·490	·491	·493	·495	·496	·498	·500
'08	·554	·556	·557	·559	·561	·563	·565	·567	·569	·571
'09	·623	·625	·627	·629	·632	·634	·636	·638	·641	·643



$$1 + a_x$$

14	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
5'4	62'630	62'500	62'369	62'238	62'105	61'972	61'837	61'702	61'566	61'429
'3	63'322	63'194	63'066	62'937	62'807	62'676	62'544	62'411	62'278	62'143
'2	64'014	63'889	63'763	63'636	63'509	63'380	63'251	63'121	62'989	62'857
'1	64'706	64'583	64'460	64'336	64'211	64'085	63'958	63'830	63'701	63'571
'0	65'398	65'278	65'157	65'035	64'912	64'789	64'664	64'539	64'413	64'286
4'9	66'090	65'972	65'854	65'734	65'614	65'493	65'371	65'248	65'125	65'000
'8	66'782	66'667	66'551	66'434	66'316	66'197	66'078	65'957	65'836	65'714
'7	67'474	67'361	67'247	67'133	67'018	66'901	66'784	66'667	66'548	66'429
'6	68'166	68'056	67'944	67'832	67'719	67'606	67'491	67'376	67'260	67'143
'5	68'858	68'750	68'641	68'531	68'421	68'310	68'198	68'085	67'972	67'857
'4	69'550	69'444	69'338	69'231	69'123	69'014	68'905	68'794	68'683	68'571
'3	70'242	70'139	70'035	69'930	69'825	69'718	69'611	69'504	69'395	69'286
'2	70'934	70'833	70'732	70'629	70'526	70'423	70'318	70'213	70'107	70'000
'1	71'626	71'528	71'429	71'329	71'228	71'127	71'025	70'922	70'819	70'714
'0	72'318	72'222	72'125	72'028	71'930	71'831	71'731	71'631	71'530	71'429
3'9	73'010	72'917	72'822	72'727	72'632	72'535	72'438	72'340	72'242	72'143
'8	73'702	73'611	73'519	73'427	73'333	73'239	73'145	73'050	72'954	72'857
'7	74'394	74'306	74'216	74'126	74'035	73'944	73'852	73'759	73'665	73'571
'6	75'087	75'000	74'913	74'825	74'737	74'648	74'558	74'468	74'377	74'286
'5	75'779	75'694	75'610	75'524	75'439	75'352	75'265	75'177	75'089	75'000
'4	76'471	76'389	76'307	76'224	76'140	76'056	75'972	75'887	75'801	75'714
'3	77'163	77'083	77'003	76'923	76'842	76'761	76'678	76'596	76'512	76'429
'2	77'855	77'778	77'700	77'622	77'544	77'465	77'385	77'305	77'224	77'143
'1	78'547	78'472	78'397	78'322	78'246	78'169	78'092	78'014	77'936	77'857
'0	79'239	79'167	79'094	79'021	78'947	78'873	78'799	78'723	78'648	78'571
2'9	79'931	79'861	79'791	79'720	79'649	79'577	79'505	79'433	79'359	79'286
'8	80'623	80'556	80'488	80'420	80'351	80'282	80'212	80'142	80'071	80'000
'7	81'315	81'250	81'185	81'119	81'053	80'986	80'919	80'851	80'783	80'714
'6	82'007	81'944	81'882	81'818	81'754	81'690	81'625	81'560	81'495	81'429
'5	82'699	82'639	82'578	82'517	82'456	82'394	82'332	82'270	82'206	82'143
'4	83'391	83'333	83'275	83'217	83'158	83'099	83'039	82'979	82'918	82'857
'3	84'083	84'028	83'972	83'916	83'860	83'803	83'746	83'688	83'630	83'571
'2	84'775	84'722	84'669	84'615	84'561	84'507	84'452	84'397	84'342	84'286
'1	85'467	85'417	85'366	85'315	85'263	85'211	85'159	85'106	85'053	85'000
'0	86'159	86'111	86'063	86'014	85'965	85'915	85'866	85'816	85'765	85'714
1'9	86'851	86'806	86'760	86'713	86'667	86'620	86'572	86'525	86'477	86'429
'8	87'543	87'500	87'456	87'413	87'368	87'324	87'279	87'234	87'189	87'143
'7	88'235	88'194	88'153	88'112	88'070	88'028	87'986	87'943	87'900	87'857
'6	88'927	88'889	88'850	88'811	88'772	88'732	88'693	88'652	88'612	88'571
'5	89'619	89'583	89'547	89'510	89'474	89'437	89'399	89'362	89'324	89'286
'4	90'311	90'278	90'244	90'210	90'175	90'141	90'106	90'071	90'036	90'000
'3	91'003	90'972	90'941	90'909	90'877	90'845	90'813	90'780	90'747	90'714
'2	91'695	91'667	91'638	91'608	91'579	91'549	91'519	91'489	91'459	91'429
'1	92'388	92'361	92'334	92'308	92'281	92'254	92'226	92'199	92'171	92'143
'0	93'080	93'056	93'031	93'007	92'982	92'958	92'933	92'908	92'883	92'857

$1 + a_x$ 

14	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
·01	·069	·069	·070	·070	·070	·070	·071	·071	·071	·071
·02	·138	·139	·139	·140	·140	·141	·141	·142	·142	·143
·03	·208	·208	·209	·210	·211	·211	·212	·213	·214	·214
·04	·277	·278	·279	·280	·281	·282	·283	·284	·285	·286
·05	·346	·347	·348	·350	·351	·352	·353	·355	·356	·357
·06	·415	·417	·418	·420	·421	·423	·424	·426	·427	·429
·07	·484	·486	·488	·490	·491	·493	·495	·496	·498	·500
·08	·554	·556	·557	·559	·561	·563	·565	·567	·569	·571
·09	·623	·625	·627	·629	·632	·634	·636	·638	·641	·643

13	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
13'9	·358	·000	·000	·000	·000	·000	·000	·000	·000	·000
'8	1'075	719	·361	·000	·000	·000	·000	·000	·000	·000
'7	1'792	1'439	1'083	·725	·364	·000	·000	·000	·000	·000
'6	2'509	2'158	1'805	1'449	1'091	·730	·366	·000	·000	·000
'5	3'226	2'878	2'527	2'174	1'818	1'460	1'099	·735	·369	·000
'4	3'943	3'597	3'249	2'899	2'545	2'190	1'832	1'471	1'107	·741
'3	4'659	4'317	3'971	3'623	3'273	2'920	2'564	2'206	1'845	1'481
'2	5'376	5'036	4'693	4'348	4'000	3'650	3'297	2'941	2'583	2'222
'1	6'093	5'755	5'415	5'072	4'727	4'380	4'029	3'676	3'321	2'963
'0	6'810	6'475	6'137	5'797	5'455	5'109	4'762	4'412	4'059	3'704
12'9	7'527	7'194	6'859	6'522	6'182	5'839	5'495	5'147	4'797	4'444
'8	8'244	7'914	7'581	7'246	6'909	6'569	6'227	5'882	5'535	5'185
'7	8'961	8'633	8'303	7'971	7'636	7'299	6'960	6'618	6'273	5'926
'6	9'677	9'353	9'025	8'696	8'364	8'029	7'692	7'353	7'011	6'667
'5	10'394	10'072	9'747	9'420	9'091	8'759	8'425	8'088	7'749	7'407
'4	11'111	10'791	10'469	10'145	9'818	9'489	9'158	8'824	8'487	8'148
'3	11'828	11'511	11'191	10'870	10'545	10'219	9'890	9'559	9'225	8'889
'2	12'545	12'230	11'913	11'594	11'273	10'949	10'623	10'294	9'963	9'630
'1	13'262	12'950	12'635	12'319	12'000	11'679	11'355	11'029	10'701	10'370
'0	13'978	13'669	13'357	13'043	12'727	12'409	12'088	11'765	11'439	11'111
11'9	14'695	14'388	14'079	13'768	13'455	13'139	12'821	12'500	12'177	11'852
'8	15'412	15'108	14'801	14'493	14'182	13'869	13'553	13'235	12'915	12'593
'7	16'129	15'827	15'523	15'217	14'909	14'599	14'286	13'971	13'653	13'333
'6	16'846	16'547	16'245	15'942	15'636	15'328	15'018	14'706	14'391	14'074
'5	17'563	17'266	16'968	16'667	16'364	16'058	15'751	15'441	15'129	14'815
·01	·072	·072	·072	·072	·073	·073	·073	·074	·074	·074
·02	·143	·144	·144	·145	·145	·146	·147	·147	·148	·148
·03	·215	·216	·217	·217	·218	·219	·220	·221	·221	·222
·04	·287	·288	·289	·290	·291	·292	·293	·294	·295	·296
·05	·358	·360	·361	·362	·364	·365	·366	·368	·369	·370
·06	·430	·432	·433	·435	·436	·438	·440	·441	·443	·444
·07	·502	·504	·505	·507	·509	·511	·513	·515	·517	·519
·08	·573	·576	·578	·580	·582	·584	·586	·588	·590	·593
·09	·645	·647	·650	·652	·655	·657	·659	·662	·664	·667

$1 + a_x$ 

13	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
11'4	18'280	17'986	17'690	17'391	17'091	16'788	16'484	16'176	15'867	15'556
'3	18'996	18'705	18'412	18'116	17'818	17'518	17'216	16'912	16'605	16'296
'2	19'713	19'424	19'134	18'841	18'545	18'248	17'949	17'647	17'343	17'037
'1	20'430	20'144	19'856	19'565	19'273	18'978	18'681	18'382	18'081	17'778
'0	21'147	20'863	20'578	20'290	20'000	19'708	19'414	19'118	18'819	18'519
10'9	21'864	21'583	21'300	21'014	20'727	20'438	20'147	19'853	19'557	19'259
'8	22'581	22'302	22'022	21'739	21'455	21'168	20'879	20'588	20'295	20'000
'7	23'297	23'022	22'744	22'464	22'182	21'898	21'612	21'324	21'033	20'741
'6	24'014	23'741	23'466	23'188	22'909	22'628	22'344	22'059	21'771	21'481
'5	24'731	24'460	24'188	23'913	23'636	23'358	23'077	22'794	22'509	22'222
'4	25'448	25'180	24'910	24'638	24'364	24'088	23'810	23'529	23'247	22'963
'3	26'165	25'899	25'632	25'362	25'091	24'818	24'542	24'265	23'985	23'704
'2	26'882	26'619	26'354	26'087	25'818	25'547	25'275	25'000	24'723	24'444
'1	27'599	27'338	27'076	26'812	26'545	26'277	26'007	25'735	25'461	25'185
'0	28'315	28'058	27'798	27'536	27'273	27'007	26'740	26'471	26'199	25'926
9'9	29'032	28'777	28'520	28'261	28'000	27'737	27'473	27'206	26'937	26'667
'8	29'749	29'496	29'242	28'986	28'727	28'467	28'205	27'941	27'675	27'407
'7	30'466	30'216	29'964	29'710	29'455	29'197	28'938	28'676	28'413	28'148
'6	31'183	30'935	30'686	30'435	30'182	29'927	29'670	29'412	29'151	28'889
'5	31'900	31'655	31'408	31'159	30'909	30'657	30'403	30'147	29'889	29'630
'4	32'616	32'374	32'130	31'884	31'636	31'387	31'136	30'882	30'627	30'370
'3	33'333	33'094	32'852	32'609	32'364	32'117	31'868	31'618	31'365	31'111
'2	34'050	33'813	33'574	33'333	33'091	32'847	32'601	32'353	32'103	31'852
'1	34'767	34'532	34'296	34'058	33'818	33'577	33'333	33'088	32'841	32'593
'0	35'484	35'252	35'018	34'783	34'545	34'307	34'066	33'824	33'579	33'333
8'9	36'201	35'971	35'740	35'507	35'273	35'036	34'799	34'559	34'317	34'074
'8	36'918	36'691	36'462	36'232	36'000	35'766	35'531	35'294	35'055	34'815
'7	37'634	37'410	37'184	36'957	36'727	36'496	36'264	36'029	35'793	35'556
'6	38'351	38'129	37'906	37'681	37'455	37'226	36'996	36'765	36'531	36'296
'5	39'068	38'849	38'628	38'406	38'182	37'956	37'729	37'500	37'269	37'037
'4	39'785	39'568	39'350	39'130	38'909	38'686	38'462	38'235	38'007	37'778
'3	40'502	40'288	40'072	39'855	39'636	39'416	39'194	38'971	38'745	38'519
'2	41'219	41'007	40'794	40'580	40'364	40'146	39'927	39'706	39'483	39'259
'1	41'935	41'727	41'516	41'304	41'091	40'876	40'659	40'441	40'221	40'000
'0	42'652	42'446	42'238	42'029	41'818	41'606	41'392	41'176	40'959	40'741
7'9	43'369	43'165	42'960	42'754	42'545	42'336	42'125	41'912	41'697	41'481
'8	44'086	43'885	43'682	43'478	43'273	43'066	42'857	42'647	42'435	42'222
'7	44'803	44'604	44'404	44'203	44'000	43'796	43'590	43'382	43'173	42'963
'6	45'520	45'324	45'126	44'928	44'727	44'526	44'322	44'118	43'911	43'704
'5	46'237	46'043	45'848	45'652	45'455	45'255	45'055	44'853	44'649	44'444
'4	46'953	46'763	46'570	46'377	46'182	45'985	45'788	45'588	45'387	45'185
'3	47'670	47'482	47'292	47'101	46'909	46'715	46'520	46'324	46'125	45'926
'2	48'387	48'201	48'014	47'826	47'636	47'445	47'253	47'059	46'863	46'667
'1	49'104	48'921	48'736	48'551	48'364	48'175	47'985	47'794	47'601	47'407
'0	49'821	49'640	49'458	49'275	49'091	48'905	48'718	48'529	48'339	48'148
6'9	50'538	50'360	50'181	50'000	49'818	49'635	49'451	49'265	49'077	48'889
'8	51'254	51'079	50'903	50'725	50'545	50'365	50'183	50'000	49'815	49'630
'7	51'971	51'799	51'625	51'449	51'273	51'095	50'916	50'735	50'554	50'370
'6	52'688	52'518	52'347	52'174	52'000	51'825	51'648	51'471	51'292	51'111
'5	53'405	53'237	53'069	52'899	52'727	52'555	52'381	52'206	52'030	51'852



$1 + a_x$ 

13	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
6.4	54'122	53'957	53'791	53'623	53'455	53'285	53'114	52'941	52'768	52'593
3	54'839	54'676	54'513	54'348	54'182	54'015	53'846	53'676	53'506	53'333
2	55'556	55'396	55'235	55'072	54'909	54'745	54'579	54'412	54'244	54'074
1	56'272	56'115	55'957	55'797	55'636	55'474	55'311	55'147	54'982	54'815
0	56'989	56'835	56'679	56'522	56'364	56'204	56'044	55'882	55'720	55'556
5.9	57'706	57'554	57'401	57'246	57'091	56'934	56'777	56'618	56'458	56'296
8	58'423	58'273	58'123	57'971	57'818	57'664	57'509	57'353	57'196	57'037
7	59'140	58'993	58'845	58'696	58'545	58'394	58'242	58'088	57'934	57'778
6	59'857	59'712	59'567	59'420	59'273	59'124	58'974	58'824	58'672	58'519
5	60'573	60'432	60'289	60'145	60'000	59'854	59'707	59'559	59'410	59'259
4	61'290	61'151	61'011	60'870	60'727	60'584	60'440	60'294	60'148	60'000
3	62'007	61'871	61'733	61'594	61'455	61'314	61'172	61'029	60'886	60'741
2	62'724	62'590	62'455	62'319	62'182	62'044	61'905	61'765	61'624	61'481
1	63'441	63'309	63'177	63'043	62'909	62'774	62'637	62'500	62'362	62'222
0	64'158	64'029	63'899	63'768	63'636	63'504	63'370	63'235	63'100	62'963
4.9	64'875	64'748	64'621	64'493	64'364	64'234	64'103	63'971	63'838	63'704
8	65'591	65'468	65'343	65'217	65'091	64'964	64'835	64'706	64'576	64'444
7	66'308	66'187	66'065	65'942	65'818	65'693	65'568	65'441	65'314	65'185
6	67'025	66'906	66'787	66'667	66'545	66'423	66'300	66'176	66'052	65'926
5	67'742	67'626	67'509	67'391	67'273	67'153	67'033	66'912	66'790	66'667
4	68'459	68'345	68'231	68'116	68'000	67'883	67'766	67'647	67'528	67'407
3	69'176	69'065	68'953	68'841	68'727	68'613	68'498	68'382	68'266	68'148
2	69'892	69'784	69'675	69'565	69'455	69'343	69'231	69'118	69'004	68'889
1	70'609	70'504	70'397	70'290	70'182	70'073	69'963	69'853	69'742	69'630
0	71'326	71'223	71'119	71'014	70'909	70'803	70'696	70'588	70'480	70'370
3.9	72'043	71'942	71'841	71'739	71'636	71'533	71'429	71'324	71'218	71'111
8	72'760	72'662	72'563	72'464	72'364	72'263	72'161	72'059	71'956	71'852
7	73'477	73'381	73'285	73'188	73'091	72'993	72'894	72'794	72'694	72'593
6	74'194	74'101	74'007	73'913	73'818	73'723	73'626	73'529	73'432	73'333
5	74'910	74'820	74'729	74'638	74'545	74'453	74'359	74'265	74'170	74'074
4	75'627	75'540	75'451	75'362	75'273	75'182	75'092	75'000	74'908	74'815
3	76'344	76'259	76'173	76'087	76'000	75'912	75'824	75'735	75'646	75'556
2	77'061	76'978	76'895	76'812	76'727	76'642	76'557	76'471	76'384	76'296
1	77'778	77'698	77'617	77'536	77'455	77'372	77'289	77'206	77'122	77'037
0	78'495	78'417	78'339	78'261	78'182	78'102	78'022	77'941	77'860	77'778
2.9	79'211	79'137	79'061	78'986	78'909	78'832	78'755	78'676	78'598	78'519
8	79'928	79'856	79'783	79'710	79'636	79'562	79'487	79'412	79'336	79'259
7	80'645	80'576	80'505	80'435	80'364	80'292	80'220	80'147	80'074	80'000
6	81'362	81'295	81'227	81'159	81'091	81'022	80'952	80'882	80'812	80'741
5	82'079	82'014	81'949	81'884	81'818	81'752	81'685	81'618	81'550	81'481
0.1	0.72	0.72	0.72	0.72	0.73	0.73	0.73	0.74	0.74	0.74
0.2	1.13	1.14	1.14	1.15	1.15	1.16	1.17	1.17	1.18	1.18
0.3	2.15	2.16	2.17	2.17	2.18	2.19	2.20	2.21	2.21	2.22
0.4	2.87	2.88	2.89	2.90	2.91	2.92	2.93	2.94	2.95	2.96
0.5	3.58	3.60	3.61	3.62	3.64	3.65	3.66	3.68	3.69	3.70
0.6	4.30	4.32	4.33	4.35	4.36	4.38	4.40	4.41	4.43	4.44
0.7	5.02	5.04	5.05	5.07	5.09	5.11	5.13	5.15	5.17	5.19
0.8	5.73	5.76	5.78	5.80	5.82	5.84	5.86	5.88	5.90	5.93
0.9	6.45	6.47	6.50	6.52	6.55	6.57	6.59	6.62	6.64	6.67



$1 + a_x$ 

13	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
2'4	82'796	82'734	82'671	82'609	82'545	82'482	82'418	82'353	82'288	82'222
'3	83'513	83'453	83'394	83'333	83'273	83'212	83'150	83'088	83'026	82'963
'2	84'229	84'173	84'116	84'058	84'000	83'942	83'883	83'824	83'764	83'704
'1	84'946	84'892	84'838	84'783	84'727	84'672	84'615	84'559	84'502	84'444
'0	85'663	85'612	85'560	85'507	85'455	85'401	85'348	85'294	85'240	85'185
1'9	86'380	86'331	86'282	86'232	86'182	86'131	86'081	86'029	85'978	85'926
'8	87'097	87'050	87'004	86'957	86'909	86'861	86'813	86'765	86'716	86'667
'7	87'814	87'770	87'726	87'681	87'636	87'591	87'546	87'500	87'454	87'407
'6	88'530	88'489	88'448	88'406	88'364	88'321	88'278	88'235	88'192	88'148
'5	89'247	89'209	89'170	89'130	89'091	89'051	89'011	88'971	88'930	88'889
'4	89'964	89'928	89'892	89'855	89'818	89'781	89'744	89'706	89'668	89'630
'3	90'681	90'647	90'614	90'580	90'545	90'511	90'476	90'441	90'406	90'370
'2	91'398	91'367	91'336	91'304	91'273	91'241	91'209	91'176	91'144	91'111
'1	92'115	92'086	92'058	92'029	92'000	91'971	91'941	91'912	91'882	91'852
'0	92'832	92'806	92'780	92'754	92'727	92'701	92'674	92'647	92'620	92'593
'01	'072	'072	'072	'072	'073	'073	'073	'074	'074	'074
'02	'143	'144	'144	'145	'145	'146	'147	'147	'148	'148
'03	'215	'216	'217	'217	'218	'219	'220	'221	'221	'222
'04	'287	'288	'289	'290	'291	'292	'293	'294	'295	'296
'05	'358	'360	'361	'362	'364	'365	'366	'368	'369	'370
'06	'430	'432	'433	'435	'436	'438	'440	'441	'443	'444
'07	'502	'504	'505	'507	'509	'511	'513	'515	'517	'519
'08	'573	'576	'578	'580	'582	'584	'586	'588	'590	'593
'09	'645	'647	'650	'652	'655	'657	'659	'662	'664	'667
13	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
13'4	'372	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	1'115	'746	'375	'000	'000	'000	'000	'000	'000	'000
'2	1'859	1'493	1'124	'752	'377	'000	'000	'000	'000	'000
'1	2'602	2'239	1'873	1'504	1'132	'758	'380	'000	'000	'000
'0	3'346	2'985	2'622	2'256	1'887	1'515	1'141	'763	'383	'000
12'9	4'089	3'731	3'371	3'008	2'642	2'273	1'901	1'527	1'149	'769
'8	4'833	4'478	4'120	3'759	3'396	3'030	2'662	2'290	1'916	1'538
'7	5'576	5'224	4'869	4'511	4'151	3'788	3'422	3'053	2'682	2'308
'6	6'320	5'970	5'618	5'263	4'906	4'545	4'183	3'817	3'448	3'077
'5	7'063	6'716	6'367	6'015	5'660	5'303	4'943	4'580	4'215	3'846
'4	7'807	7'463	7'116	6'767	6'415	6'061	5'703	5'344	4'981	4'615
'3	8'550	8'209	7'865	7'519	7'170	6'818	6'464	6'107	5'747	5'385
'2	9'294	8'955	8'614	8'271	7'925	7'576	7'224	6'870	6'513	6'154
'1	10'037	9'701	9'363	9'023	8'679	8'333	7'985	7'634	7'280	6'923
'0	10'781	10'448	10'112	9'774	9'434	9'091	8'745	8'397	8'046	7'692
11'9	11'524	11'194	10'861	10'526	10'189	9'848	9'506	9'160	8'812	8'462
'8	12'268	11'940	11'610	11'278	10'943	10'606	10'266	9'924	9'579	9'231
'7	13'011	12'687	12'360	12'030	11'698	11'364	11'027	10'687	10'345	10'000
'6	13'755	13'433	13'109	12'782	12'453	12'121	11'787	11'450	11'111	10'769
'5	14'498	14'179	13'858	13'534	13'208	12'879	12'548	12'214	11'877	11'538

$1 + a_x$ 

13	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
11.4	15'242	14'925	14'607	14'286	13'962	13'636	13'308	12'977	12'644	12'308
'3	15'985	15'672	15'356	15'038	14'717	14'394	14'068	13'740	13'410	13'077
'2	16'729	16'418	16'105	15'789	15'472	15'152	14'829	14'504	14'176	13'846
'1	17'472	17'164	16'854	16'541	16'226	15'909	15'589	15'267	14'943	14'615
'0	18'216	17'910	17'603	17'293	16'981	16'667	16'350	16'031	15'709	15'385
10.9	18'959	18'657	18'352	18'045	17'736	17'424	17'110	16'794	16'475	16'154
'8	19'703	19'403	19'101	18'797	18'491	18'182	17'871	17'557	17'241	16'923
'7	20'446	20'149	19'850	19'549	19'245	18'939	18'631	18'321	18'008	17'692
'6	21'190	20'896	20'599	20'301	20'000	19'697	19'392	19'084	18'774	18'462
'5	21'933	21'642	21'348	21'053	20'755	20'455	20'152	19'847	19'540	19'231
'4	22'677	22'388	22'097	21'805	21'509	21'212	20'913	20'611	20'307	20'000
'3	23'420	23'134	22'846	22'556	22'264	21'970	21'673	21'374	21'073	20'769
'2	24'164	23'881	23'596	23'308	23'019	22'727	22'433	22'137	21'839	21'538
'1	24'907	24'627	24'345	24'060	23'774	23'485	23'194	22'901	22'605	22'308
'0	25'651	25'373	25'094	24'812	24'528	24'242	23'954	23'664	23'372	23'077
9.9	26'394	26'119	25'843	25'564	25'283	25'000	24'715	24'427	24'138	23'846
'8	27'138	26'866	26'592	26'316	26'038	25'758	25'475	25'191	24'904	24'615
'7	27'881	27'612	27'341	27'068	26'792	26'515	26'236	25'954	25'670	25'385
'6	28'625	28'358	28'090	27'820	27'547	27'273	26'996	26'718	26'437	26'154
'5	29'368	29'104	28'839	28'571	28'302	28'030	27'757	27'481	27'203	26'923
'4	30'112	29'851	29'588	29'323	29'057	28'788	28'517	28'244	27'969	27'692
'3	30'855	30'597	30'337	30'075	29'811	29'545	29'278	29'008	28'736	28'462
'2	31'599	31'343	31'086	30'827	30'566	30'303	30'038	29'771	29'502	29'231
'1	32'342	32'090	31'835	31'579	31'321	31'061	30'798	30'534	30'268	30'000
'0	33'086	32'836	32'584	32'331	32'075	31'818	31'559	31'298	31'034	30'769
8.9	33'829	33'582	33'333	33'083	32'830	32'576	32'319	32'061	31'801	31'538
'8	34'572	34'328	34'082	33'835	33'585	33'333	33'080	32'824	32'567	32'308
'7	35'316	35'075	34'831	34'586	34'340	34'091	33'840	33'588	33'333	33'077
'6	36'059	35'821	35'581	35'338	35'094	34'848	34'601	34'351	34'100	33'846
'5	36'803	36'567	36'330	36'090	35'849	35'606	35'361	35'115	34'866	34'615
'4	37'546	37'313	37'079	36'842	36'604	36'364	36'122	35'878	35'632	35'385
'3	38'290	38'060	37'828	37'594	37'358	37'121	36'882	36'641	36'398	36'154
'2	39'033	38'806	38'577	38'346	38'113	37'879	37'643	37'405	37'165	36'923
'1	39'777	39'552	39'326	39'098	38'868	38'636	38'403	38'168	37'931	37'692
'0	40'520	40'299	40'075	39'850	39'623	39'394	39'163	38'931	38'697	38'462
7.9	41'264	41'045	40'824	40'602	40'377	40'152	39'924	39'695	39'464	39'231
'8	42'007	41'791	41'573	41'353	41'132	40'909	40'684	40'458	40'230	40'000
'7	42'751	42'537	42'322	42'105	41'887	41'667	41'445	41'221	40'996	40'769
'6	43'494	43'284	43'071	42'857	42'642	42'424	42'205	41'985	41'762	41'538
'5	44'238	44'030	43'820	43'609	43'396	43'182	42'966	42'748	42'529	42'308
'01	·074	·075	·075	·075	·075	·076	·076	·076	·077	·077
'02	·149	·149	·150	·150	·151	·152	·152	·153	·153	·154
'03	·223	·224	·225	·226	·226	·227	·228	·229	·230	·231
'04	·297	·299	·300	·301	·302	·303	·304	·305	·307	·308
'05	·372	·373	·375	·376	·377	·379	·380	·382	·383	·385
'06	·446	·448	·449	·451	·453	·455	·456	·458	·460	·462
'07	·520	·522	·524	·526	·528	·530	·532	·534	·536	·538
'08	·595	·597	·599	·602	·604	·606	·608	·611	·613	·615
'09	·669	·672	·674	·677	·679	·682	·684	·687	·690	·692

$1 + a_x$ 

13	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
7.4	44'981	44'776	44'569	44'361	44'151	43'939	43'726	43'511	43'295	43'077
3	45'725	45'522	45'318	45'113	44'906	44'697	44'487	44'275	44'061	43'846
2	46'468	46'269	46'067	45'865	45'660	45'455	45'247	45'038	44'828	44'615
1	47'212	47'015	46'816	46'617	46'415	46'212	46'008	45'802	45'594	45'385
0	47'955	47'761	47'566	47'368	47'170	46'970	46'768	46'565	46'360	46'154
6.9	48'699	48'507	48'315	48'120	47'925	47'727	47'529	47'328	47'126	46'923
8	49'442	49'254	49'064	48'872	48'679	48'485	48'289	48'092	47'893	47'692
7	50'186	50'000	49'813	49'624	49'434	49'242	49'049	48'855	48'659	48'462
6	50'929	50'746	50'562	50'376	50'189	50'000	49'810	49'618	49'425	49'231
5	51'673	51'493	51'311	51'128	50'943	50'758	50'570	50'382	50'192	50'000
4	52'416	52'239	52'060	51'880	51'698	51'515	51'331	51'145	50'958	50'769
3	53'160	52'985	52'809	52'632	52'453	52'273	52'091	51'908	51'724	51'538
2	53'903	53'731	53'558	53'383	53'208	53'030	52'852	52'672	52'490	52'308
1	54'647	54'478	54'307	54'135	53'962	53'788	53'612	53'435	53'257	53'077
0	55'390	55'224	55'056	54'887	54'717	54'545	54'373	54'198	54'023	53'846
5.9	56'134	55'970	55'805	55'639	55'472	55'303	55'133	54'962	54'789	54'615
8	56'877	56'716	56'554	56'391	56'226	56'061	55'894	55'725	55'556	55'385
7	57'621	57'463	57'303	57'143	56'981	56'818	56'654	56'489	56'322	56'154
6	58'364	58'209	58'052	57'895	57'736	57'576	57'414	57'252	57'088	56'923
5	59'108	58'955	58'802	58'647	58'491	58'333	58'175	58'015	57'854	57'692
4	59'851	59'701	59'551	59'398	59'245	59'091	58'935	58'779	58'621	58'462
3	60'595	60'448	60'300	60'150	60'000	59'848	59'696	59'542	59'387	59'231
2	61'338	61'194	61'049	60'902	60'755	60'606	60'456	60'305	60'153	60'000
1	62'082	61'940	61'798	61'654	61'509	61'364	61'217	61'069	60'920	60'769
0	62'825	62'687	62'547	62'406	62'264	62'121	61'977	61'832	61'686	61'538
4.9	63'569	63'433	63'296	63'158	63'019	62'879	62'738	62'595	62'452	62'308
8	64'312	64'179	64'045	63'910	63'774	63'636	63'498	63'359	63'218	63'077
7	65'056	64'925	64'794	64'662	64'528	64'394	64'259	64'122	63'985	63'846
6	65'799	65'672	65'543	65'414	65'283	65'152	65'019	64'885	64'751	64'615
5	66'543	66'418	66'292	66'165	66'038	65'909	65'779	65'649	65'517	65'385
4	67'286	67'164	67'041	66'917	66'792	66'667	66'540	66'412	66'284	66'154
3	68'030	67'910	67'790	67'669	67'547	67'424	67'300	67'176	67'050	66'923
2	68'773	68'657	68'539	68'421	68'302	68'182	68'061	67'939	67'816	67'692
1	69'517	69'403	69'288	69'173	69'057	68'939	68'821	68'702	68'582	68'462
0	70'260	70'149	70'037	69'925	69'811	69'697	69'582	69'466	69'349	69'231
3.9	71'004	70'896	70'787	70'677	70'566	70'455	70'342	70'229	70'115	70'000
8	71'747	71'642	71'536	71'429	71'321	71'212	71'103	70'992	70'881	70'769
7	72'491	72'388	72'285	72'180	72'075	71'970	71'863	71'756	71'648	71'538
6	73'234	73'134	73'034	72'932	72'830	72'727	72'624	72'519	72'414	72'308
5	73'978	73'881	73'783	73'684	73'585	73'485	73'384	73'282	73'180	73'077
4	74'721	74'627	74'532	74'436	74'340	74'242	74'144	74'046	73'946	73'846
3	75'465	75'373	75'281	75'188	75'094	75'000	74'905	74'809	74'713	74'615
2	76'208	76'119	76'030	75'940	75'849	75'758	75'665	75'573	75'479	75'385
1	76'952	76'866	76'779	76'692	76'604	76'515	76'426	76'336	76'245	76'154
0	77'695	77'612	77'528	77'444	77'358	77'273	77'186	77'099	77'011	76'923
2.9	78'439	78'358	78'277	78'195	78'113	78'030	77'947	77'863	77'778	77'692
8	79'182	79'104	79'026	78'947	78'868	78'788	78'707	78'626	78'544	78'462
7	79'926	79'851	79'775	79'699	79'623	79'545	79'468	79'389	79'310	79'231
6	80'669	80'597	80'524	80'451	80'377	80'303	80'228	80'153	80'077	80'000
5	81'413	81'343	81'273	81'203	81'132	81'061	80'989	80'916	80'843	80'769



$1 + a_x$ 

13	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
2'4	82'156	82'090	82'022	81'955	81'887	81'818	81'749	81'679	81'609	81'538
'3	82'900	82'836	82'772	82'707	82'642	82'576	82'510	82'443	82'375	82'308
'2	83'643	83'582	83'521	83'459	83'396	83'333	83'270	83'206	83'142	83'077
'1	84'387	84'328	84'270	84'211	84'151	84'091	84'030	83'969	83'908	83'846
'0	85'130	85'075	85'019	84'962	84'906	84'848	84'791	84'733	84'674	84'615
1'9	85'874	85'821	85'768	85'714	85'660	85'606	85'551	85'496	85'441	85'385
'8	86'617	86'567	86'517	86'466	86'415	86'364	86'312	86'260	86'207	86'154
'7	87'361	87'313	87'266	87'218	87'170	87'121	87'072	87'023	86'973	86'923
'6	88'104	88'060	88'015	87'970	87'925	87'879	87'833	87'786	87'739	87'692
'5	88'848	88'806	88'764	88'722	88'679	88'636	88'593	88'550	88'506	88'462
'4	89'591	89'552	89'513	89'474	89'434	89'394	89'354	89'313	89'272	89'231
'3	90'335	90'299	90'262	90'226	90'189	90'152	90'114	90'076	90'038	90'000
'2	91'078	91'045	91'011	90'977	90'943	90'909	90'875	90'840	90'805	90'769
'1	91'822	91'791	91'760	91'729	91'698	91'667	91'635	91'603	91'571	91'538
'0	92'565	92'537	92'509	92'481	92'453	92'424	92'395	92'366	92'337	92'308
'01	'074	'075	'075	'075	'075	'076	'076	'076	'077	'077
'02	'149	'149	'150	'150	'151	'152	'152	'153	'153	'154
'03	'223	'224	'225	'226	'226	'227	'228	'229	'230	'231
'04	'297	'299	'300	'301	'302	'303	'304	'305	'307	'308
'05	'372	'373	'375	'376	'377	'379	'380	'382	'383	'385
'06	'446	'448	'449	'451	'453	'455	'456	'458	'460	'462
'07	'520	'522	'524	'526	'528	'530	'532	'534	'536	'538
'08	'595	'597	'599	'602	'604	'606	'608	'611	'613	'615
'09	'669	'672	'674	'677	'679	'682	'684	'687	'690	'692

12	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
12'9	'386	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	1'158	'775	'389	'000	'000	'000	'000	'000	'000	'000
'7	1'931	1'550	1'167	'781	'392	'000	'000	'000	'000	'000
'6	2'703	2'326	1'946	1'563	1'176	'787	'395	'000	'000	'000
'5	3'475	3'101	2'724	2'344	1'961	1'575	1'186	'794	'398	'000
'4	4'247	3'876	3'502	3'125	2'745	2'362	1'976	1'587	1'195	'800
'3	5'019	4'651	4'280	3'906	3'529	3'150	2'767	2'381	1'992	1'600
'2	5'792	5'426	5'058	4'688	4'314	3'937	3'557	3'175	2'789	2'400
'1	6'564	6'202	5'837	5'469	5'098	4'724	4'348	3'968	3'586	3'200
'0	7'336	6'977	6'615	6'250	5'882	5'512	5'138	4'762	4'382	4'000
'01	'077	'078	'078	'078	'078	'079	'079	'079	'080	'080
'02	'154	'155	'156	'156	'157	'157	'158	'159	'159	'160
'03	'232	'233	'233	'234	'235	'236	'237	'238	'239	'240
'04	'309	'310	'311	'313	'314	'315	'316	'317	'319	'320
'05	'386	'388	'389	'391	'392	'394	'395	'397	'398	'400
'06	'463	'465	'467	'469	'471	'472	'474	'476	'478	'480
'07	'541	'543	'545	'547	'549	'551	'553	'556	'558	'560
'08	'618	'620	'623	'625	'627	'630	'632	'635	'637	'640
'09	'695	'698	'700	'703	'706	'709	'711	'714	'717	'720



$1 + a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x-r}$										
11'9	8'108	7'752	7'393	7'031	6'667	6'299	5'929	5'556	5'179	4'800
'8	8'880	8'527	8'171	7'813	7'451	7'087	6'719	6'349	5'976	5'600
'7	9'653	9'302	8'949	8'594	8'235	7'874	7'510	7'143	6'773	6'400
'6	10'425	10'078	9'728	9'375	9'020	8'661	8'300	7'937	7'570	7'200
'5	11'197	10'853	10'506	10'156	9'804	9'449	9'091	8'730	8'367	8'000
'4	11'969	11'628	11'284	10'938	10'588	10'236	9'881	9'524	9'163	8'800
'3	12'741	12'403	12'062	11'719	11'373	11'024	10'672	10'317	9'960	9'600
'2	13'514	13'178	12'840	12'500	12'157	11'811	11'462	11'111	10'757	10'400
'1	14'286	13'953	13'619	13'281	12'941	12'598	12'253	11'905	11'554	11'200
'0	15'058	14'729	14'397	14'063	13'725	13'386	13'043	12'698	12'351	12'000
10'9	15'830	15'504	15'175	14'844	14'510	14'173	13'834	13'492	13'147	12'800
'8	16'602	16'279	15'953	15'625	15'294	14'961	14'625	14'286	13'944	13'600
'7	17'375	17'054	16'732	16'406	16'078	15'748	15'415	15'079	14'741	14'400
'6	18'147	17'829	17'510	17'188	16'863	16'535	16'206	15'873	15'538	15'200
'5	18'919	18'605	18'288	17'969	17'647	17'323	16'996	16'667	16'335	16'000
'4	19'691	19'380	19'066	18'750	18'431	18'110	17'787	17'460	17'131	16'800
'3	20'463	20'155	19'844	19'531	19'216	18'898	18'577	18'254	17'928	17'600
'2	21'236	20'930	20'623	20'313	20'000	19'685	19'368	19'048	18'725	18'400
'1	22'008	21'705	21'401	21'094	20'784	20'472	20'158	19'841	19'522	19'200
'0	22'780	22'481	22'179	21'875	21'569	21'260	20'949	20'635	20'319	20'000
9'9	23'552	23'256	22'957	22'656	22'353	22'047	21'739	21'429	21'116	20'800
'8	24'324	24'031	23'735	23'438	23'137	22'835	22'530	22'222	21'912	21'600
'7	25'097	24'806	24'514	24'219	23'922	23'622	23'320	23'016	22'709	22'400
'6	25'869	25'581	25'292	25'000	24'706	24'409	24'111	23'810	23'506	23'200
'5	26'641	26'357	26'070	25'781	25'490	25'197	24'901	24'603	24'303	24'000
'4	27'413	27'132	26'848	26'563	26'275	25'984	25'692	25'397	25'100	24'800
'3	28'185	27'907	27'626	27'344	27'059	26'772	26'482	26'190	25'896	25'600
'2	28'958	28'682	28'405	28'125	27'843	27'559	27'273	26'984	26'693	26'400
'1	29'730	29'457	29'183	28'906	28'627	28'346	28'063	27'778	27'490	27'200
'0	30'502	30'233	29'961	29'688	29'412	29'134	28'854	28'571	28'287	28'000
8'9	31'274	31'008	30'739	30'469	30'196	29'921	29'644	29'365	29'084	28'800
'8	32'046	31'783	31'518	31'250	30'980	30'709	30'435	30'159	29'880	29'600
'7	32'819	32'558	32'296	32'031	31'765	31'496	31'225	30'952	30'677	30'400
'6	33'591	33'333	33'074	32'813	32'549	32'283	32'016	31'746	31'474	31'200
'5	34'363	34'109	33'852	33'594	33'333	33'071	32'806	32'540	32'271	32'000
'4	35'135	34'884	34'630	34'375	34'118	33'858	33'597	33'333	33'068	32'800
'3	35'907	35'659	35'409	35'156	34'902	34'646	34'387	34'127	33'865	33'600
'2	36'680	36'434	36'187	35'938	35'686	35'433	35'178	34'921	34'661	34'400
'1	37'452	37'209	36'965	36'719	36'471	36'220	35'968	35'714	35'458	35'200
'0	38'224	37'984	37'743	37'500	37'255	37'008	36'759	36'508	36'255	36'000
7'9	38'996	38'760	38'521	38'281	38'039	37'795	37'549	37'302	37'052	36'800
'8	39'768	39'535	39'300	39'063	38'824	38'583	38'340	38'095	37'849	37'600
'7	40'541	40'310	40'078	39'844	39'608	39'370	39'130	38'889	38'645	38'400
'6	41'313	41'085	40'856	40'625	40'392	40'157	39'921	39'683	39'442	39'200
'5	42'085	41'860	41'634	41'406	41'176	40'945	40'711	40'476	40'239	40'000
'4	42'857	42'636	42'412	42'188	41'961	41'732	41'502	41'270	41'036	40'800
'3	43'629	43'411	43'191	42'969	42'745	42'520	42'292	42'063	41'833	41'600
'2	44'402	44'186	43'969	43'750	43'529	43'307	43'083	42'857	42'629	42'400
'1	45'174	44'961	44'747	44'531	44'314	44'094	43'874	43'651	43'426	43'200
'0	45'946	45'736	45'525	45'313	45'098	44'882	44'664	44'444	44'223	44'000

$$1 + a_x$$

12	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
1 $\tau$ $a_{x+n}$										
6'9	46'718	46'512	46'304	46'094	45'882	45'669	45'455	45'238	45'020	44'800
'8	47'490	47'287	47'082	46'875	46'667	46'457	46'245	46'032	45'817	45'600
'7	48'263	48'062	47'860	47'656	47'451	47'244	47'036	46'825	46'614	46'400
'6	49'035	48'837	48'638	48'438	48'235	48'031	47'826	47'619	47'410	47'200
'5	49'807	49'612	49'416	49'219	49'020	48'819	48'617	48'413	48'207	48'000
'4	50'579	50'388	50'195	50'000	49'804	49'606	49'407	49'206	49'004	48'800
'3	51'351	51'163	50'973	50'781	50'588	50'394	50'198	50'000	49'801	49'600
'2	52'124	51'938	51'751	51'563	51'373	51'181	50'988	50'794	50'598	50'400
'1	52'896	52'713	52'529	52'344	52'157	51'969	51'779	51'587	51'394	51'200
'0	53'668	53'488	53'307	53'125	52'941	52'756	52'569	52'381	52'191	52'000
5'9	54'440	54'264	54'086	53'906	53'725	53'543	53'360	53'175	52'988	52'800
'8	55'212	55'039	54'864	54'688	54'510	54'331	54'150	53'968	53'785	53'600
'7	55'985	55'814	55'642	55'469	55'294	55'118	54'941	54'762	54'582	54'400
'6	56'757	56'589	56'420	56'250	56'078	55'906	55'731	55'556	55'378	55'200
'5	57'529	57'364	57'198	57'031	56'863	56'693	56'522	56'349	56'175	56'000
'4	58'301	58'140	57'977	57'813	57'647	57'480	57'312	57'143	56'972	56'800
'3	59'073	58'915	58'755	58'594	58'431	58'268	58'103	57'937	57'769	57'600
'2	59'846	59'690	59'533	59'375	59'216	59'055	58'893	58'730	58'566	58'400
'1	60'618	60'465	60'311	60'156	60'000	59'843	59'684	59'524	59'363	59'200
'0	61'390	61'240	61'089	60'938	60'784	60'630	60'474	60'317	60'159	60'000
4'9	62'162	62'016	61'868	61'719	61'569	61'417	61'265	61'111	60'956	60'800
'8	62'934	62'791	62'646	62'500	62'353	62'205	62'055	61'905	61'753	61'600
'7	63'707	63'566	63'424	63'281	63'137	62'992	62'846	62'698	62'550	62'400
'6	64'479	64'341	64'202	64'063	63'922	63'780	63'636	63'492	63'347	63'200
'5	65'251	65'116	64'981	64'844	64'706	64'567	64'427	64'286	64'143	64'000
'4	66'023	65'891	65'759	65'625	65'490	65'354	65'217	65'079	64'940	64'800
'3	66'795	66'667	66'537	66'406	66'275	66'142	66'008	65'873	65'737	65'600
'2	67'568	67'442	67'315	67'188	67'059	66'929	66'798	66'667	66'534	66'400
'1	68'340	68'217	68'093	67'969	67'843	67'717	67'589	67'460	67'331	67'200
'0	69'112	68'992	68'872	68'750	68'627	68'504	68'379	68'254	68'127	68'000
3'9	69'884	69'767	69'650	69'531	69'412	69'291	69'170	69'048	68'924	68'800
'8	70'656	70'543	70'428	70'313	70'196	70'079	69'960	69'841	69'721	69'600
'7	71'429	71'318	71'206	71'094	70'980	70'866	70'751	70'635	70'518	70'400
'6	72'201	72'093	71'984	71'875	71'765	71'654	71'541	71'429	71'315	71'200
'5	72'973	72'868	72'763	72'656	72'549	72'441	72'332	72'222	72'112	72'000
'4	73'745	73'643	73'541	73'438	73'333	73'228	73'123	73'016	72'908	72'800
'3	74'517	74'419	74'319	74'219	74'118	74'016	73'913	73'810	73'705	73'600
'2	75'290	75'194	75'097	75'000	74'902	74'803	74'704	74'603	74'502	74'400
'1	76'062	75'969	75'875	75'781	75'686	75'591	75'494	75'397	75'299	75'200
'0	76'834	76'744	76'654	76'563	76'471	76'378	76'285	76'190	76'096	76'000
'01	'077	'078	'078	'078	'078	'079	'079	'079	'080	'080
'02	'151	'155	'156	'156	'157	'157	'158	'159	'159	'160
'03	'222	'233	'233	'234	'235	'236	'237	'238	'239	'240
'04	'309	'310	'311	'313	'314	'315	'316	'317	'319	'320
'05	'386	'388	'389	'391	'392	'394	'395	'397	'398	'400
'06	'463	'465	'467	'469	'471	'472	'474	'476	'478	'480
'07	'541	'543	'545	'547	'549	'551	'553	'556	'558	'560
'08	'618	'620	'623	'625	'627	'630	'632	'635	'637	'640
'09	'695	'698	'700	'703	'706	'709	'711	'714	'717	'720

$1 + a_x$										
12	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
2'9	77'606	77'519	77'432	77'344	77'255	77'165	77'075	76'984	76'892	76'800
'8	78'378	78'295	78'210	78'125	78'039	77'953	77'866	77'778	77'689	77'600
'7	79'151	79'070	78'988	78'906	78'824	78'740	78'656	78'571	78'486	78'400
'6	79'923	79'845	79'767	79'688	79'608	79'528	79'447	79'365	79'283	79'200
'5	80'695	80'620	80'545	80'469	80'392	80'315	80'237	80'159	80'080	80'000
'4	81'467	81'395	81'323	81'250	81'176	81'102	81'028	80'952	80'876	80'800
'3	82'239	82'171	82'101	82'031	81'961	81'890	81'818	81'746	81'673	81'600
'2	83'012	82'946	82'879	82'813	82'745	82'677	82'609	82'540	82'470	82'400
'1	83'784	83'721	83'658	83'594	83'529	83'465	83'399	83'333	83'267	83'200
'0	84'556	84'496	84'436	84'375	84'314	84'252	84'190	84'127	84'064	84'000
1'9	85'328	85'271	85'214	85'156	85'098	85'039	84'980	84'921	84'861	84'800
'8	86'100	86'047	85'992	85'938	85'882	85'827	85'771	85'714	85'657	85'600
'7	86'873	86'822	86'770	86'719	86'667	86'614	86'561	86'508	86'454	86'400
'6	87'645	87'597	87'549	87'500	87'451	87'402	87'352	87'302	87'251	87'200
'5	88'417	88'372	88'327	88'281	88'235	88'189	88'142	88'095	88'048	88'000
'4	89'189	89'147	89'105	89'063	89'020	88'976	88'933	88'889	88'845	88'800
'3	89'961	89'922	89'883	89'844	89'804	89'764	89'723	89'683	89'641	89'600
'2	90'734	90'698	90'661	90'625	90'588	90'551	90'514	90'476	90'438	90'400
'1	91'506	91'473	91'440	91'406	91'373	91'339	91'304	91'270	91'235	91'200
'0	92'278	92'248	92'218	92'188	92'157	92'126	92'095	92'063	92'032	92'000
'01	'077	'078	'078	'078	'078	'079	'079	'079	'080	'080
'02	'154	'155	'156	'156	'157	'157	'158	'159	'159	'160
'03	'232	'233	'233	'234	'235	'236	'237	'238	'239	'240
'04	'309	'310	'311	'313	'314	'315	'316	'317	'319	'320
'05	'386	'388	'389	'391	'392	'394	'395	'397	'398	'400
'06	'463	'465	'467	'469	'471	'472	'474	'476	'478	'480
'07	'541	'543	'545	'547	'549	'551	'553	'556	'558	'560
'08	'618	'620	'623	'625	'627	'630	'632	'635	'637	'640
'09	'695	'698	'700	'703	'706	'709	'711	'714	'717	'720
12	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
12'4	'402	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	1'205	'806	'405	'000	'000	'000	'000	'000	'000	'000
'2	2'008	1'613	1'215	'813	'408	'000	'000	'000	'000	'000
'1	2'811	2'419	2'024	1'626	1'224	'820	'412	'000	'000	'000
'0	3'614	3'226	2'834	2'439	2'041	1'639	1'235	'826	'415	'000
11'9	4'418	4'032	3'644	3'252	2'857	2'459	2'058	1'653	1'245	'833
'8	5'221	4'839	4'453	4'065	3'673	3'279	2'881	2'479	2'075	1'667
'7	6'024	5'645	5'263	4'878	4'490	4'098	3'704	3'306	2'905	2'500
'6	6'827	6'452	6'073	5'691	5'306	4'918	4'527	4'132	3'734	3'333
'5	7'631	7'258	6'883	6'504	6'122	5'738	5'350	4'959	4'564	4'167
'4	8'434	8'065	7'692	7'317	6'939	6'557	6'173	5'785	5'394	5'000
'3	9'237	8'871	8'502	8'130	7'755	7'377	6'996	6'612	6'224	5'833
'2	10'040	9'677	9'312	8'943	8'571	8'197	7'819	7'438	7'054	6'667
'1	10'843	10'484	10'121	9'756	9'388	9'016	8'642	8'264	7'884	7'500
'0	11'647	11'290	10'931	10'569	10'204	9'836	9'465	9'091	8'714	8'333



$1 + a_x$ 

12	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
10'9	12'450	12'097	11'741	11'382	11'020	10'656	10'288	9'917	9'544	9'167
'8	13'253	12'903	12'551	12'195	11'837	11'475	11'111	10'744	10'373	10'000
'7	14'056	13'710	13'360	13'008	12'653	12'295	11'934	11'570	11'203	10'833
'6	14'859	14'516	14'170	13'821	13'469	13'115	12'757	12'397	12'033	11'667
'5	15'663	15'323	14'980	14'634	14'286	13'934	13'580	13'223	12'863	12'500
'4	16'466	16'129	15'789	15'447	15'102	14'754	14'403	14'050	13'693	13'333
'3	17'269	16'935	16'599	16'260	15'918	15'574	15'226	14'876	14'523	14'167
'2	18'072	17'742	17'409	17'073	16'735	16'393	16'049	15'702	15'353	15'000
'1	18'876	18'548	18'219	17'886	17'551	17'213	16'872	16'529	16'183	15'833
'0	19'679	19'355	19'028	18'699	18'367	18'033	17'695	17'355	17'012	16'667
9'9	20'482	20'161	19'838	19'512	19'184	18'852	18'519	18'182	17'842	17'500
'8	21'285	20'968	20'648	20'325	20'000	19'672	19'342	19'008	18'672	18'333
'7	22'088	21'774	21'457	21'138	20'816	20'492	20'165	19'835	19'502	19'167
'6	22'892	22'581	22'267	21'951	21'633	21'311	20'988	20'661	20'332	20'000
'5	23'695	23'387	23'077	22'764	22'449	22'131	21'811	21'488	21'162	20'833
'4	24'498	24'194	23'887	23'577	23'265	22'951	22'634	22'314	21'992	21'667
'3	25'301	25'000	24'696	24'390	24'082	23'770	23'457	23'140	22'822	22'500
'2	26'104	25'806	25'506	25'203	24'898	24'590	24'280	23'967	23'651	23'333
'1	26'908	26'613	26'316	26'016	25'714	25'410	25'103	24'793	24'481	24'167
'0	27'711	27'419	27'126	26'829	26'531	26'230	25'926	25'620	25'311	25'000
8'9	28'514	28'226	27'935	27'642	27'347	27'049	26'749	26'446	26'141	25'833
'8	29'317	29'032	28'745	28'455	28'163	27'869	27'572	27'273	26'971	26'667
'7	30'120	29'839	29'555	29'268	28'980	28'689	28'395	28'099	27'801	27'500
'6	30'924	30'645	30'364	30'081	29'796	29'508	29'218	28'926	28'631	28'333
'5	31'727	31'452	31'174	30'894	30'612	30'328	30'041	29'752	29'461	29'167
'4	32'530	32'258	31'984	31'707	31'429	31'148	30'864	30'579	30'290	30'000
'3	33'333	33'065	32'794	32'520	32'245	31'967	31'687	31'405	31'120	30'833
'2	34'137	33'871	33'603	33'333	33'061	32'787	32'510	32'231	31'950	31'667
'1	34'940	34'677	34'413	34'146	33'878	33'607	33'333	33'058	32'780	32'500
'0	35'743	35'484	35'223	34'959	34'694	34'426	34'156	33'884	33'610	33'333
7'9	36'546	36'290	36'032	35'772	35'510	35'246	34'979	34'711	34'440	34'167
'8	37'349	37'097	36'842	36'585	36'327	36'066	35'802	35'537	35'270	35'000
'7	38'153	37'903	37'652	37'398	37'143	36'885	36'626	36'364	36'100	35'833
'6	38'956	38'710	38'462	38'211	37'959	37'705	37'449	37'190	36'929	36'677
'5	39'759	39'516	39'271	39'024	38'776	38'525	38'272	38'017	37'759	37'500
'4	40'562	40'323	40'081	39'837	39'592	39'344	39'095	38'843	38'589	38'333
'3	41'365	41'129	40'891	40'650	40'408	40'164	39'918	39'669	39'419	39'167
'2	42'169	41'935	41'700	41'463	41'224	40'984	40'741	40'496	40'249	40'000
'1	42'972	42'742	42'510	42'276	42'041	41'803	41'564	41'322	41'079	40'833
'0	43'775	43'548	43'320	43'089	42'857	42'623	42'387	42'149	41'909	41'667
'01	'080	'081	'081	'081	'082	'082	'082	'083	'083	'083
'02	'161	'161	'162	'163	'163	'164	'165	'165	'166	'167
'03	'241	'242	'243	'244	'245	'246	'247	'248	'249	'250
'04	'321	'323	'324	'325	'327	'328	'329	'331	'332	'333
'05	'402	'403	'405	'407	'408	'410	'412	'413	'415	'417
'06	'482	'484	'486	'488	'490	'492	'494	'496	'498	'500
'07	'562	'565	'567	'569	'571	'574	'576	'579	'581	'583
'08	'643	'645	'648	'650	'653	'656	'658	'661	'664	'667
'09	'723	'726	'729	'732	'735	'738	'741	'744	'747	'750



$1+a_x$ 

12	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
6'9	44'578	44'355	44'130	43'902	43'673	43'443	43'210	42'975	42'739	42'500
'8	45'382	45'161	44'939	44'715	44'490	44'262	44'033	43'802	43'568	43'333
'7	46'185	45'968	45'749	45'528	45'306	45'082	44'856	44'628	44'398	44'167
'6	46'988	46'774	46'559	46'341	46'122	45'902	45'679	45'455	45'228	45'000
'5	47'791	47'581	47'368	47'154	46'939	46'721	46'502	46'281	46'058	45'833
'4	48'594	48'387	48'178	47'967	47'755	47'541	47'325	47'107	46'888	46'667
'3	49'398	49'194	48'988	48'780	48'571	48'361	48'148	47'934	47'718	47'500
'2	50'201	50'000	49'798	49'593	49'388	49'180	48'971	48'760	48'548	48'333
'1	51'004	50'806	50'607	50'407	50'204	50'000	49'794	49'587	49'378	49'167
'0	51'807	51'613	51'417	51'220	51'020	50'820	50'617	50'413	50'207	50'000
5'9	52'610	52'419	52'227	52'033	51'837	51'639	51'440	51'240	51'037	50'833
'8	53'414	53'226	53'036	52'846	52'653	52'459	52'263	52'066	51'867	51'667
'7	54'217	54'032	53'846	53'659	53'469	53'279	53'086	52'893	52'697	52'500
'6	55'020	54'839	54'656	54'472	54'286	54'098	53'909	53'719	53'527	53'333
'5	55'823	55'645	55'466	55'285	55'102	54'918	54'733	54'545	54'357	54'167
'4	56'627	56'452	56'275	56'098	55'918	55'738	55'556	55'372	55'187	55'000
'3	57'430	57'258	57'085	56'911	56'735	56'557	56'379	56'198	56'017	55'833
'2	58'233	58'065	57'895	57'724	57'551	57'377	57'202	57'025	56'846	56'667
'1	59'036	58'871	58'704	58'537	58'367	58'197	58'025	57'851	57'676	57'500
'0	59'839	59'677	59'514	59'350	59'184	59'016	58'848	58'678	58'506	58'333
4'9	60'643	60'484	60'324	60'163	60'000	59'836	59'671	59'504	59'336	59'167
'8	61'446	61'290	61'134	60'976	60'816	60'656	60'494	60'331	60'166	60'000
'7	62'249	62'097	61'943	61'789	61'633	61'475	61'317	61'157	60'996	60'833
'6	63'052	62'903	62'753	62'602	62'449	62'295	62'140	61'983	61'826	61'667
'5	63'855	63'710	63'563	63'415	63'265	63'115	62'963	62'810	62'656	62'500
'4	64'659	64'516	64'372	64'228	64'082	63'934	63'786	63'636	63'485	63'333
'3	65'462	65'323	65'182	65'041	64'898	64'754	64'609	64'463	64'315	64'167
'2	66'265	66'129	65'992	65'854	65'714	65'574	65'432	65'289	65'145	65'000
'1	67'068	66'935	66'802	66'667	66'531	66'393	66'255	66'116	65'975	65'833
'0	67'871	67'742	67'611	67'480	67'347	67'213	67'078	66'942	66'805	66'667
3'9	68'675	68'548	68'421	68'293	68'163	68'033	67'901	67'769	67'635	67'500
'8	69'478	69'355	69'231	69'106	68'980	68'852	68'724	68'595	68'465	68'333
'7	70'281	70'161	70'040	69'919	69'796	69'672	69'547	69'421	69'295	69'167
'6	71'084	70'968	70'850	70'732	70'612	70'492	70'370	70'248	70'124	70'000
'5	71'888	71'774	71'660	71'545	71'429	71'311	71'193	71'074	70'954	70'833
'4	72'691	72'581	72'470	72'358	72'245	72'131	72'016	71'901	71'784	71'667
'3	73'494	73'387	73'279	73'171	73'061	72'951	72'840	72'727	72'614	72'500
'2	74'297	74'194	74'089	73'984	73'878	73'770	73'663	73'554	73'444	73'333
'1	75'100	75'000	74'899	74'797	74'694	74'590	74'486	74'380	74'274	74'167
'0	75'904	75'806	75'709	75'610	75'510	75'410	75'309	75'207	75'104	75'000
2'9	76'707	76'613	76'518	76'423	76'327	76'230	76'132	76'033	75'934	75'833
'8	77'510	77'419	77'328	77'236	77'143	77'049	76'955	76'860	76'763	76'667
'7	78'313	78'226	78'138	78'049	77'959	77'869	77'778	77'686	77'593	77'500
'6	79'116	79'032	78'947	78'862	78'776	78'689	78'601	78'512	78'423	78'333
'5	79'920	79'839	79'757	79'675	79'592	79'508	79'424	79'339	79'253	79'167
'4	80'723	80'645	80'567	80'488	80'408	80'328	80'247	80'165	80'083	80'000
'3	81'526	81'452	81'377	81'301	81'224	81'148	81'070	80'992	80'913	80'833
'2	82'329	82'258	82'186	82'114	82'041	81'967	81'893	81'818	81'743	81'667
'1	83'133	83'065	82'996	82'927	82'857	82'787	82'716	82'645	82'573	82'500
'0	83'936	83'871	83'806	83'740	83'673	83'607	83'539	83'471	83'402	83'333

$1 + a_x$ 

12	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
1+ $a_{x+n}$										
1'9	84'739	84'677	84'615	84'553	84'490	84'426	84'362	84'298	84'232	84'167
'8	85'542	85'484	85'425	85'366	85'306	85'246	85'185	85'124	85'062	85'000
'7	86'345	86'290	86'235	86'179	86'122	86'066	86'008	85'950	85'892	85'833
'6	87'149	87'097	87'045	86'992	86'939	86'885	86'831	86'777	86'722	86'667
'5	87'952	87'903	87'854	87'805	87'755	87'705	87'654	87'603	87'552	87'500
'4	88'755	88'710	88'664	88'618	88'571	88'525	88'477	88'430	88'382	88'333
'3	89'558	89'516	89'474	89'431	89'388	89'344	89'300	89'256	89'212	89'167
'2	90'361	90'323	90'283	90'244	90'204	90'164	90'123	90'083	90'041	90'000
'1	91'165	91'129	91'093	91'057	91'020	90'984	90'947	90'909	90'871	90'833
'0	91'968	91'935	91'903	91'870	91'837	91'803	91'770	91'736	91'701	91'667

'01	'080	'081	'081	'081	'082	'082	'082	'083	'083	'083
'02	'161	'161	'162	'163	'163	'164	'165	'165	'166	'167
'03	'241	'242	'243	'244	'245	'246	'247	'248	'249	'250
'04	'321	'323	'324	'325	'327	'328	'329	'331	'332	'333
'05	'402	'403	'405	'407	'408	'410	'412	'413	'415	'417
'06	'482	'484	'486	'488	'490	'492	'494	'496	'498	'500
'07	'562	'565	'567	'569	'571	'574	'576	'579	'581	'583
'08	'643	'645	'648	'650	'653	'656	'658	'661	'664	'667
'09	'723	'726	'729	'732	'735	'738	'741	'744	'747	'750

11	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
11'9	'418	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	1'255	'840	'422	'000	'000	'000	'000	'000	'000	'000
'7	2'092	1'681	1'266	'847	'426	'000	'000	'000	'000	'000
'6	2'929	2'521	2'110	1'695	1'277	'855	'429	'000	'000	'000
'5	3'766	3'361	2'954	2'542	2'128	1'709	1'288	'862	'433	'000
'4	4'603	4'202	3'797	3'390	2'979	2'564	2'146	1'724	1'299	'870
'3	5'439	5'042	4'641	4'237	3'830	3'419	3'004	2'586	2'165	1'739
'2	6'276	5'882	5'485	5'085	4'681	4'274	3'863	3'448	3'030	2'609
'1	7'113	6'723	6'329	5'932	5'532	5'128	4'721	4'310	3'896	3'478
'0	7'950	7'563	7'173	6'780	6'383	5'983	5'579	5'172	4'762	4'348
10'9	8'787	8'403	8'017	7'627	7'234	6'838	6'438	6'034	5'628	5'217
'8	9'623	9'244	8'861	8'475	8'085	7'692	7'296	6'897	6'494	6'087
'7	10'460	10'084	9'705	9'322	8'936	8'547	8'155	7'759	7'359	6'957
'6	11'297	10'924	10'549	10'169	9'787	9'402	9'013	8'621	8'225	7'826
'5	12'134	11'765	11'392	11'017	10'638	10'256	9'871	9'483	9'091	8'696

'01	'084	'084	'084	'085	'085	'085	'086	'086	'087	'087
'02	'167	'168	'169	'169	'170	'171	'172	'172	'173	'174
'03	'251	'252	'253	'254	'255	'256	'258	'259	'260	'261
'04	'335	'336	'338	'339	'340	'342	'343	'345	'346	'348
'05	'418	'420	'422	'424	'426	'427	'429	'431	'433	'435
'06	'502	'504	'506	'508	'511	'513	'515	'517	'519	'522
'07	'586	'588	'591	'593	'596	'598	'601	'603	'606	'609
'08	'669	'672	'675	'678	'681	'684	'687	'690	'693	'696
'09	'753	'756	'759	'763	'766	'769	'773	'776	'779	'783

$1 + a_x$ 

II	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
10'4	12'971	12'605	12'236	11'864	11'489	11'111	10'730	10'345	9'957	9'565
'3	13'808	13'445	13'080	12'712	12'340	11'966	11'588	11'207	10'823	10'435
'2	14'644	14'286	13'924	13'559	13'191	12'821	12'446	12'069	11'688	11'304
'1	15'481	15'126	14'768	14'407	14'043	13'675	13'305	12'931	12'554	12'174
'0	16'318	15'966	15'612	15'254	14'894	14'530	14'163	13'793	13'420	13'043
9'9	17'155	16'807	16'456	16'102	15'745	15'385	15'021	14'655	14'286	13'913
'8	17'992	17'647	17'300	16'949	16'596	16'239	15'880	15'517	15'152	14'783
'7	18'828	18'487	18'143	17'797	17'447	17'094	16'738	16'379	16'017	15'652
'6	19'665	19'328	18'987	18'644	18'298	17'949	17'597	17'241	16'883	16'522
'5	20'502	20'168	19'831	19'492	19'149	18'803	18'455	18'103	17'749	17'391
'4	21'339	21'008	20'675	20'339	20'000	19'658	19'313	18'966	18'615	18'261
'3	22'176	21'849	21'519	21'186	20'851	20'513	20'172	19'828	19'481	19'130
'2	23'013	22'689	22'363	22'034	21'702	21'368	21'030	20'690	20'346	20'000
'1	23'849	23'529	23'207	22'881	22'553	22'222	21'888	21'552	21'212	20'870
'0	24'686	24'370	24'051	23'729	23'404	23'077	22'747	22'414	22'078	21'739
8'9	25'523	25'210	24'895	24'576	24'255	23'932	23'605	23'276	22'944	22'609
'8	26'360	26'050	25'738	25'424	25'106	24'786	24'464	24'138	23'810	23'478
'7	27'197	26'891	26'582	26'271	25'957	25'641	25'322	25'000	24'675	24'348
'6	28'033	27'731	27'426	27'119	26'809	26'496	26'180	25'862	25'541	25'217
'5	28'870	28'571	28'270	27'966	27'660	27'350	27'039	26'724	26'407	26'087
'4	29'707	29'412	29'114	28'814	28'511	28'205	27'897	27'586	27'273	26'957
'3	30'544	30'252	29'958	29'661	29'362	29'060	28'755	28'448	28'139	27'826
'2	31'381	31'092	30'802	30'508	30'213	29'915	29'614	29'310	29'004	28'696
'1	32'218	31'933	31'646	31'356	31'064	30'769	30'472	30'172	29'870	29'565
'0	33'054	32'773	32'489	32'203	31'915	31'624	31'330	31'034	30'736	30'435
7'9	33'891	33'613	33'333	33'051	32'766	32'479	32'189	31'897	31'602	31'304
'8	34'728	34'454	34'177	33'898	33'617	33'333	33'047	32'759	32'468	32'174
'7	35'565	35'294	35'021	34'746	34'468	34'188	33'906	33'621	33'333	33'043
'6	36'402	36'134	35'865	35'593	35'319	35'043	34'764	34'483	34'199	33'913
'5	37'238	36'975	36'709	36'441	36'170	35'897	35'622	35'345	35'065	34'783
'4	38'075	37'815	37'553	37'288	37'021	36'752	36'481	36'207	35'931	35'652
'3	38'912	38'655	38'397	38'136	37'872	37'607	37'339	37'069	36'797	36'522
'2	39'749	39'496	39'241	38'983	38'723	38'462	38'197	37'931	37'662	37'391
'1	40'586	40'336	40'084	39'831	39'574	39'316	39'056	38'793	38'528	38'261
'0	41'423	41'176	40'928	40'678	40'426	40'171	39'914	39'655	39'394	39'130
6'9	42'259	42'017	41'772	41'525	41'277	41'026	40'773	40'517	40'260	40'000
'8	43'096	42'857	42'616	42'373	42'128	41'880	41'631	41'379	41'126	40'870
'7	43'933	43'697	43'460	43'220	42'979	42'735	42'489	42'241	41'991	41'739
'6	44'770	44'538	44'304	44'068	43'830	43'590	43'348	43'103	42'857	42'609
'5	45'607	45'378	45'148	44'915	44'681	44'441	44'206	43'966	43'723	43'478
'4	46'444	46'218	45'992	45'763	45'532	45'299	45'064	44'828	44'589	44'348
'3	47'280	47'059	46'835	46'610	46'383	46'154	45'923	45'690	45'455	45'217
'2	48'117	47'899	47'679	47'458	47'234	47'009	46'781	46'552	46'320	46'087
'1	48'954	48'739	48'523	48'305	48'085	47'863	47'639	47'414	47'186	46'957
'0	49'791	49'580	49'367	49'153	48'936	48'718	48'498	48'276	48'052	47'826
5'9	50'628	50'420	50'211	50'000	49'787	49'573	49'356	49'138	48'918	48'696
'8	51'464	51'261	51'055	50'847	50'638	50'427	50'215	50'000	49'784	49'565
'7	52'301	52'101	51'899	51'695	51'489	51'282	51'073	50'862	50'649	50'435
'6	53'138	52'941	52'743	52'542	52'340	52'137	51'931	51'724	51'515	51'304
'5	53'975	53'782	53'587	53'390	53'191	52'991	52'790	52'586	52'381	52'174



$1 + \alpha_x$ 

11	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + \alpha_{x+n}$										
5'4	54'812	54'622	54'430	54'237	54'043	53'846	53'648	53'448	53'247	53'043
3	55'649	55'462	55'274	55'085	54'894	54'701	54'506	54'310	54'113	53'913
2	56'485	56'303	56'118	55'932	55'745	55'556	55'365	55'172	54'978	54'783
1	57'322	57'143	56'962	56'780	56'596	56'410	56'223	56'034	55'844	55'652
0	58'159	57'983	57'806	57'627	57'447	57'265	57'082	56'897	56'710	56'522
4'9	58'996	58'824	58'650	58'475	58'298	58'120	57'940	57'759	57'576	57'391
8	59'833	59'664	59'494	59'322	59'149	58'974	58'798	58'621	58'442	58'261
7	60'669	60'504	60'338	60'169	60'000	59'829	59'657	59'483	59'307	59'130
6	61'506	61'345	61'181	61'017	60'851	60'684	60'515	60'345	60'173	60'000
5	62'343	62'185	62'025	61'864	61'702	61'538	61'373	61'207	61'039	60'870
4	63'180	63'025	62'869	62'712	62'553	62'393	62'232	62'069	61'905	61'739
3	64'017	63'866	63'713	63'559	63'404	63'248	63'090	62'931	62'771	62'609
2	64'854	64'706	64'557	64'407	64'255	64'103	63'948	63'793	63'636	63'478
1	65'690	65'546	65'401	65'254	65'106	64'957	64'807	64'655	64'502	64'348
0	66'527	66'387	66'245	66'102	65'957	65'812	65'665	65'517	65'368	65'217
3'9	67'364	67'227	67'089	66'949	66'809	66'667	66'524	66'379	66'234	66'087
8	68'201	68'067	67'932	67'797	67'660	67'521	67'382	67'241	67'100	66'957
7	69'038	68'908	68'776	68'644	68'511	68'376	68'240	68'103	67'965	67'826
6	69'874	69'748	69'620	69'492	69'362	69'231	69'099	68'966	68'831	68'696
5	70'711	70'588	70'464	70'339	70'213	70'085	69'957	69'828	69'697	69'565
4	71'548	71'429	71'308	71'186	71'064	70'940	70'815	70'690	70'563	70'435
3	72'385	72'269	72'152	72'034	71'915	71'795	71'674	71'552	71'429	71'304
2	73'222	73'109	72'996	72'881	72'766	72'650	72'532	72'414	72'294	72'174
1	74'059	73'950	73'840	73'729	73'617	73'504	73'391	73'276	73'160	73'043
0	74'895	74'790	74'684	74'576	74'468	74'359	74'249	74'138	74'026	73'913
2'9	75'732	75'630	75'527	75'424	75'319	75'214	75'107	75'000	74'892	74'783
8	76'569	76'471	76'371	76'271	76'170	76'068	75'966	75'862	75'758	75'652
7	77'406	77'311	77'215	77'119	77'021	76'923	76'824	76'724	76'623	76'522
6	78'243	78'151	78'059	77'966	77'872	77'778	77'682	77'586	77'489	77'391
5	79'079	78'992	78'903	78'814	78'723	78'632	78'541	78'448	78'355	78'261
4	79'916	79'832	79'747	79'661	79'574	79'487	79'399	79'310	79'221	79'130
3	80'753	80'672	80'591	80'508	80'426	80'342	80'258	80'172	80'087	80'000
2	81'590	81'513	81'435	81'356	81'277	81'197	81'116	81'034	80'952	80'870
1	82'427	82'353	82'278	82'203	82'128	82'051	81'974	81'897	81'818	81'739
0	83'264	83'193	83'122	83'051	82'979	82'906	82'833	82'759	82'684	82'609
1'9	84'100	84'034	83'966	83'898	83'830	83'761	83'691	83'621	83'550	83'478
8	84'937	84'874	84'810	84'746	84'681	84'615	84'549	84'483	84'416	84'348
7	85'774	85'714	85'654	85'593	85'532	85'470	85'408	85'345	85'281	85'217
6	86'611	86'555	86'498	86'441	86'383	86'325	86'266	86'207	86'147	86'087
5	87'448	87'395	87'342	87'288	87'234	87'179	87'124	87'069	87'013	86'957
01	084	084	084	085	085	085	086	086	087	087
02	167	168	169	169	170	171	172	172	173	174
03	251	252	253	254	255	256	258	259	260	261
04	335	336	338	339	340	342	343	345	346	348
05	418	420	422	424	426	427	429	431	433	435
06	502	504	506	508	511	513	515	517	519	522
07	586	588	591	593	596	598	601	603	606	609
08	669	672	675	678	681	684	687	690	693	696
09	753	756	759	763	766	769	773	776	779	783



$1 + a_x$										
II	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
I'4	88'285	88'235	88'186	88'136	88'085	88'034	87'983	87'931	87'879	87'826
'3	89'121	89'076	89'030	88'983	88'936	88'889	88'841	88'793	88'745	88'696
'2	89'958	89'916	89'873	89'831	89'787	89'744	89'700	89'655	89'610	89'565
'1	90'795	90'756	90'717	90'678	90'638	90'598	90'558	90'517	90'476	90'435
'0	91'632	91'597	91'561	91'525	91'489	91'453	91'416	91'379	91'342	91'304
'01	'084	'084	'084	'085	'085	'085	'086	'086	'087	'087
'02	'167	'168	'169	'169	'170	'171	'172	'172	'173	'174
'03	'251	'252	'253	'254	'255	'256	'258	'259	'260	'261
'04	'335	'336	'338	'339	'340	'342	'343	'345	'346	'348
'05	'418	'420	'422	'424	'426	'427	'429	'431	'433	'435
'06	'502	'504	'506	'508	'511	'513	'515	'517	'519	'522
'07	'586	'588	'591	'593	'596	'598	'601	'603	'606	'609
'08	'669	'672	'675	'678	'681	'684	'687	'690	'693	'696
'09	'753	'756	'759	'763	'766	'769	'773	'776	'779	'783
II	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
II'4	'437	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	1'310	'877	'441	'000	'000	'000	'000	'000	'000	'000
'2	2'183	1'754	1'322	'885	'444	'000	'000	'000	'000	'000
'1	3'057	2'632	2'203	1'770	1'333	'893	'448	'000	'000	'000
'0	3'930	3'509	3'084	2'655	2'222	1'786	1'345	'901	'452	'000
IO'9	4'803	4'386	3'965	3'540	3'111	2'679	2'242	1'802	1'357	'909
'8	5'677	5'263	4'846	4'425	4'000	3'571	3'139	2'703	2'262	1'818
'7	6'550	6'140	5'727	5'310	4'889	4'464	4'036	3'604	3'167	2'727
'6	7'424	7'018	6'608	6'195	5'778	5'357	4'933	4'505	4'072	3'636
'5	8'297	7'895	7'489	7'080	6'667	6'250	5'830	5'405	4'977	4'545
'4	9'170	8'772	8'370	7'965	7'556	7'143	6'726	6'306	5'882	5'455
'3	10'044	9'649	9'251	8'850	8'444	8'036	7'623	7'207	6'787	6'364
'2	10'917	10'526	10'132	9'735	9'333	8'929	8'520	8'108	7'692	7'273
'1	11'790	11'404	11'013	10'619	10'222	9'821	9'417	9'009	8'597	8'182
'0	12'664	12'281	11'894	11'504	11'111	10'714	10'314	9'910	9'502	9'091
9'9	13'537	13'158	12'775	12'389	12'000	11'607	11'211	10'811	10'407	10'000
'8	14'410	14'035	13'656	13'274	12'889	12'500	12'108	11'712	11'312	10'909
'7	15'284	14'912	14'537	14'159	13'778	13'393	13'004	12'613	12'217	11'818
'6	16'157	15'789	15'419	15'044	14'667	14'286	13'901	13'514	13'122	12'727
'5	17'031	16'667	16'300	15'929	15'556	15'179	14'798	14'414	14'027	13'636
'4	17'904	17'544	17'181	16'814	16'444	16'071	15'695	15'315	14'932	14'545
'3	18'777	18'421	18'062	17'699	17'333	16'964	16'592	16'216	15'837	15'455
'2	19'651	19'298	18'943	18'584	18'222	17'857	17'489	17'117	16'742	16'364
'1	20'524	20'175	19'824	19'469	19'111	18'750	18'386	18'018	17'647	17'273
'0	21'397	21'053	20'705	20'354	20'000	19'643	19'283	18'919	18'552	18'182
8'9	22'271	21'930	21'586	21'239	20'889	20'536	20'179	19'820	19'457	19'091
'8	23'144	22'807	22'467	22'124	21'778	21'429	21'076	20'721	20'362	20'000
'7	24'017	23'684	23'348	23'009	22'667	22'321	21'973	21'622	21'267	20'909
'6	24'891	24'561	24'229	23'894	23'556	23'214	22'870	22'523	22'172	21'818
'5	25'764	25'439	25'110	24'779	24'444	24'107	23'767	23'423	23'077	22'727

$1 + \alpha_x$ 

II	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + \alpha_{x+n}$										
8.4	26'638	26'316	25'991	25'664	25'333	25'000	24'664	24'324	23'982	23'636
'3	27'511	27'193	26'872	26'549	26'222	25'893	25'561	25'225	24'887	24'545
'2	28'384	28'070	27'753	27'434	27'111	26'786	26'457	26'126	25'792	25'455
'1	29'258	28'947	28'634	28'319	28'000	27'679	27'354	27'027	26'697	26'364
'0	30'131	29'825	29'515	29'204	28'889	28'571	28'251	27'928	27'602	27'273
7.9	31'004	30'702	30'396	30'088	29'778	29'464	29'148	28'829	28'507	28'182
'8	31'878	31'579	31'278	30'973	30'667	30'357	30'045	29'730	29'412	29'091
'7	32'751	32'456	32'159	31'858	31'556	31'250	30'942	30'631	30'317	30'000
'6	33'624	33'333	33'040	32'743	32'444	32'143	31'839	31'532	31'222	30'909
'5	34'498	34'211	33'921	33'628	33'333	33'036	32'735	32'432	32'127	31'818
'4	35'371	35'088	34'802	34'513	34'222	33'929	33'632	33'333	33'032	32'727
'3	36'245	35'965	35'683	35'398	35'111	34'821	34'529	34'234	33'937	33'636
'2	37'118	36'842	36'564	36'283	36'000	35'714	35'426	35'135	34'842	34'545
'1	37'991	37'719	37'445	37'168	36'889	36'607	36'323	36'036	35'747	35'455
'0	38'865	38'596	38'326	38'053	37'778	37'500	37'220	36'937	36'652	36'364
6.9	39'738	39'474	39'207	38'938	38'667	38'393	38'117	37'838	37'557	37'273
'8	40'611	40'351	40'088	39'823	39'556	39'286	39'013	38'739	38'462	38'182
'7	41'485	41'228	40'969	40'708	40'444	40'179	39'910	39'640	39'367	39'091
'6	42'358	42'105	41'850	41'593	41'333	41'071	40'807	40'541	40'271	40'000
'5	43'231	42'982	42'731	42'478	42'222	41'964	41'704	41'441	41'176	40'909
'4	44'105	43'860	43'612	43'363	43'111	42'857	42'601	42'342	42'081	41'818
'3	44'978	44'737	44'493	44'248	44'000	43'750	43'498	43'243	42'986	42'727
'2	45'852	45'614	45'374	45'133	44'889	44'643	44'395	44'144	43'891	43'636
'1	46'725	46'491	46'256	46'018	45'778	45'536	45'291	45'045	44'796	44'545
'0	47'598	47'368	47'137	46'903	46'667	46'429	46'188	45'946	45'701	45'455
5.9	48'472	48'246	48'018	47'788	47'556	47'321	47'085	46'847	46'606	46'364
'8	49'345	49'123	48'899	48'673	48'444	48'214	47'982	47'748	47'511	47'273
'7	50'218	50'000	49'780	49'558	49'333	49'107	48'879	48'649	48'416	48'182
'6	51'092	50'877	50'661	50'442	50'222	50'000	49'776	49'550	49'321	49'091
'5	51'965	51'754	51'542	51'327	51'111	50'893	50'673	50'450	50'226	50'000
'4	52'838	52'632	52'423	52'212	52'000	51'786	51'570	51'351	51'131	50'909
'3	53'712	53'509	53'304	53'097	52'889	52'679	52'466	52'252	52'036	51'818
'2	54'585	54'386	54'185	53'982	53'778	53'571	53'363	53'153	52'941	52'727
'1	55'459	55'263	55'066	54'867	54'667	54'464	54'260	54'054	53'846	53'636
'0	56'332	56'140	55'947	55'752	55'556	55'357	55'157	54'955	54'751	54'545
4.9	57'205	57'018	56'828	56'637	56'444	56'250	56'054	55'856	55'656	55'455
'8	58'079	57'895	57'709	57'522	57'333	57'143	56'951	56'757	56'561	56'364
'7	58'952	58'772	58'590	58'407	58'222	58'036	57'848	57'658	57'466	57'273
'6	59'825	59'649	59'471	59'292	59'111	58'929	58'744	58'559	58'371	58'182
'5	60'699	60'526	60'352	60'177	60'000	59'821	59'641	59'459	59'276	59'091
'01	·087	·088	·088	·088	·089	·089	·090	·090	·090	·091
'02	·175	·175	·176	·177	·178	·179	·179	·180	·181	·182
'03	·262	·263	·264	·265	·267	·268	·269	·270	·271	·273
'04	·349	·351	·352	·354	·356	·357	·359	·360	·362	·364
'05	·437	·439	·441	·442	·444	·446	·448	·450	·452	·455
'06	·524	·526	·529	·531	·533	·536	·538	·541	·543	·545
'07	·611	·614	·617	·619	·622	·625	·628	·631	·633	·636
'08	·699	·702	·705	·708	·711	·714	·717	·721	·724	·727
'09	·786	·789	·793	·796	·800	·804	·807	·811	·814	·818

$1 + a_x$ 

$11$	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
4.4	61.572	61.404	61.233	61.062	60.889	60.714	60.538	60.360	60.181	60.000
.3	62.445	62.281	62.115	61.947	61.778	61.607	61.435	61.261	61.086	60.909
.2	63.319	63.158	62.996	62.832	62.667	62.500	62.332	62.162	61.991	61.818
.1	64.192	64.035	63.877	63.717	63.556	63.393	63.229	63.063	62.896	62.727
.0	65.065	64.912	64.758	64.602	64.444	64.286	64.126	63.964	63.801	63.636
3.9	65.939	65.789	65.639	65.487	65.333	65.179	65.022	64.865	64.706	64.545
.8	66.812	66.667	66.520	66.372	66.222	66.071	65.919	65.766	65.611	65.455
.7	67.686	67.544	67.401	67.257	67.111	66.964	66.816	66.667	66.516	66.364
.6	68.559	68.421	68.282	68.142	68.000	67.857	67.713	67.568	67.421	67.273
.5	69.432	69.298	69.163	69.027	68.889	68.750	68.610	68.468	68.326	68.182
.4	70.306	70.175	70.044	69.912	69.778	69.643	69.507	69.369	69.231	69.091
.3	71.179	71.053	70.925	70.796	70.667	70.536	70.404	70.270	70.136	70.000
.2	72.052	71.930	71.806	71.681	71.556	71.429	71.300	71.171	71.041	70.909
.1	72.926	72.807	72.687	72.566	72.444	72.321	72.197	72.072	71.946	71.818
.0	73.799	73.684	73.568	73.451	73.333	73.214	73.094	72.973	72.851	72.727
2.9	74.672	74.561	74.449	74.336	74.222	74.107	73.991	73.874	73.756	73.636
.8	75.546	75.439	75.330	75.221	75.111	75.000	74.888	74.775	74.661	74.545
.7	76.419	76.316	76.211	76.106	76.000	75.893	75.785	75.676	75.566	75.455
.6	77.293	77.193	77.093	76.991	76.889	76.786	76.682	76.577	76.471	76.364
.5	78.166	78.070	77.974	77.876	77.778	77.679	77.578	77.477	77.376	77.273
.4	79.039	78.947	78.855	78.761	78.667	78.571	78.475	78.378	78.281	78.182
.3	79.913	79.825	79.736	79.646	79.556	79.464	79.372	79.279	79.186	79.091
.2	80.786	80.702	80.617	80.531	80.444	80.357	80.269	80.180	80.090	80.000
.1	81.659	81.579	81.498	81.416	81.333	81.250	81.166	81.081	80.995	80.909
.0	82.533	82.456	82.379	82.301	82.222	82.143	82.063	81.982	81.900	81.818
1.9	83.406	83.333	83.260	83.186	83.111	83.036	82.960	82.883	82.805	82.727
.8	84.279	84.211	84.141	84.071	84.000	83.929	83.857	83.784	83.710	83.636
.7	85.153	85.088	85.022	84.956	84.889	84.821	84.753	84.685	84.615	84.545
.6	86.026	85.965	85.903	85.841	85.778	85.714	85.650	85.586	85.520	85.455
.5	86.900	86.842	86.784	86.726	86.667	86.607	86.547	86.486	86.425	86.364
.4	87.773	87.719	87.665	87.611	87.556	87.500	87.444	87.387	87.330	87.273
.3	88.646	88.596	88.546	88.496	88.444	88.393	88.341	88.288	88.235	88.182
.2	89.520	89.474	89.427	89.381	89.333	89.286	89.238	89.189	89.140	89.091
.1	90.393	90.351	90.308	90.265	90.222	90.179	90.135	90.090	90.045	90.000
.0	91.266	91.228	91.189	91.150	91.111	91.071	91.031	90.991	90.950	90.909
.01	.087	.088	.088	.088	.089	.089	.090	.090	.090	.091
.02	.175	.175	.176	.177	.178	.179	.179	.180	.181	.182
.03	.262	.263	.264	.265	.267	.268	.269	.270	.271	.273
.04	.349	.351	.352	.354	.356	.357	.359	.360	.362	.364
.05	.437	.439	.441	.442	.444	.446	.448	.450	.452	.455
.06	.524	.526	.529	.531	.533	.536	.538	.541	.543	.545
.07	.611	.611	.617	.619	.622	.625	.628	.631	.633	.636
.08	.699	.702	.705	.708	.711	.714	.717	.721	.724	.727
.09	.786	.789	.793	.796	.800	.804	.807	.811	.814	.818



$$1 + a_x$$

IO	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
10'9	.457	.000	.000	.000	.000	.000	.000	.000	.000	.000
'8	1'370	.917	.461	.000	.000	.000	.000	.000	.000	.000
'7	2'283	1'835	1'382	.926	.465	.000	.000	.000	.000	.000
'6	3'196	2'752	2'304	1'852	1'395	.935	.469	.000	.000	.000
'5	4'110	3'670	3'226	2'778	2'326	1'869	1'408	.943	.474	.000
'4	5'023	4'587	4'147	3'704	3'256	2'804	2'347	1'887	1'422	.952
'3	5'936	5'505	5'069	4'630	4'186	3'738	3'286	2'830	2'370	1'905
'2	6'849	6'422	5'991	5'556	5'116	4'673	4'225	3'774	3'318	2'857
'1	7'763	7'339	6'912	6'481	6'047	5'607	5'164	4'717	4'265	3'810
'0	8'676	8'257	7'834	7'407	6'977	6'542	6'103	5'660	5'213	4'762
9'9	9'589	9'174	8'756	8'333	7'907	7'477	7'042	6'604	6'161	5'714
'8	10'502	10'092	9'677	9'259	8'837	8'411	7'981	7'547	7'109	6'667
'7	11'416	11'009	10'599	10'185	9'767	9'346	8'920	8'491	8'057	7'619
'6	12'329	11'927	11'521	11'111	10'698	10'280	9'859	9'434	9'005	8'571
'5	13'242	12'844	12'442	12'037	11'628	11'215	10'798	10'377	9'953	9'524
'4	14'155	13'761	13'364	12'963	12'558	12'150	11'737	11'321	10'900	10'476
'3	15'068	14'679	14'286	13'889	13'488	13'084	12'676	12'264	11'848	11'429
'2	15'982	15'596	15'207	14'815	14'419	14'019	13'615	13'208	12'796	12'381
'1	16'895	16'514	16'129	15'741	15'349	14'953	14'554	14'151	13'744	13'333
'0	17'808	17'431	17'051	16'667	16'279	15'888	15'493	15'094	14'692	14'286
8'9	18'721	18'349	17'972	17'593	17'209	16'822	16'432	16'038	15'640	15'238
'8	19'635	19'266	18'894	18'519	18'140	17'757	17'371	16'981	16'588	16'190
'7	20'548	20'183	19'816	19'444	19'070	18'692	18'310	17'925	17'536	17'143
'6	21'461	21'101	20'737	20'370	20'000	19'626	19'249	18'868	18'483	18'095
'5	22'374	22'018	21'659	21'296	20'930	20'561	20'188	19'811	19'431	19'048
'4	23'288	22'936	22'581	22'222	21'860	21'495	21'127	20'755	20'379	20'000
'3	24'201	23'853	23'502	23'148	22'791	22'430	22'066	21'698	21'327	20'952
'2	25'114	24'771	24'424	24'074	23'721	23'364	23'005	22'642	22'275	21'905
'1	26'027	25'688	25'346	25'000	24'651	24'299	23'944	23'585	23'223	22'857
'0	26'941	26'606	26'267	25'926	25'581	25'234	24'883	24'528	24'171	23'810
7'9	27'854	27'523	27'189	26'852	26'512	26'168	25'822	25'472	25'118	24'762
'8	28'767	28'440	28'111	27'778	27'442	27'103	26'761	26'415	26'066	25'714
'7	29'680	29'358	29'032	28'704	28'372	28'037	27'700	27'358	27'014	26'667
'6	30'594	30'275	29'954	29'630	29'302	28'972	28'638	28'302	27'962	27'619
'5	31'507	31'193	30'876	30'556	30'233	29'907	29'577	29'245	28'910	28'571
'4	32'420	32'110	31'797	31'481	31'163	30'841	30'516	30'189	29'858	29'524
'3	33'333	33'028	32'719	32'407	32'093	31'776	31'455	31'132	30'806	30'476
'2	34'247	33'945	33'641	33'333	33'023	32'710	32'394	32'075	31'754	31'429
'1	35'160	34'862	34'562	34'259	33'953	33'645	33'333	33'019	32'701	32'381
'0	36'073	35'780	35'484	35'185	34'884	34'579	34'272	33'962	33'649	33'333
'01	.091	.092	.092	.093	.093	.093	.094	.094	.095	.095
'02	.183	.183	.184	.185	.186	.187	.188	.189	.190	.190
'03	.274	.275	.276	.278	.279	.280	.282	.283	.284	.286
'04	.365	.367	.369	.370	.372	.374	.376	.377	.379	.381
'05	.457	.459	.461	.463	.465	.467	.469	.472	.474	.476
'06	.548	.550	.553	.556	.558	.561	.563	.566	.569	.571
'07	.639	.642	.645	.648	.651	.654	.657	.660	.664	.667
'08	.731	.734	.737	.741	.744	.748	.751	.755	.758	.762
'09	.822	.826	.829	.833	.837	.841	.845	.849	.853	.857



$1 + a_x$ 

IO	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
6.9	36.986	36.697	36.406	36.111	35.814	35.514	35.211	34.906	34.597	34.286
.8	37.900	37.615	37.327	37.037	36.744	36.449	36.150	35.849	35.545	35.238
.7	38.813	38.532	38.249	37.963	37.674	37.383	37.089	36.792	36.493	36.190
.6	39.726	39.450	39.171	38.889	38.605	38.318	38.028	37.736	37.441	37.143
.5	40.639	40.367	40.092	39.815	39.535	39.252	38.967	38.679	38.389	38.095
.4	41.553	41.284	41.014	40.741	40.465	40.187	39.906	39.623	39.336	39.048
.3	42.466	42.202	41.935	41.667	41.395	41.121	40.845	40.566	40.284	40.000
.2	43.379	43.119	42.857	42.593	42.326	42.056	41.784	41.509	41.232	40.952
.1	44.292	44.037	43.779	43.519	43.256	42.991	42.723	42.453	42.180	41.905
.0	45.205	44.954	44.700	44.444	44.186	43.925	43.662	43.396	43.128	42.857
5.9	46.119	45.872	45.622	45.370	45.116	44.860	44.601	44.340	44.076	43.810
.8	47.032	46.789	46.544	46.296	46.047	45.794	45.540	45.283	45.024	44.762
.7	47.945	47.706	47.465	47.222	46.977	46.729	46.479	46.226	45.972	45.714
.6	48.858	48.624	48.387	48.148	47.907	47.664	47.418	47.170	46.919	46.667
.5	49.772	49.541	49.309	49.074	48.837	48.598	48.357	48.113	47.867	47.619
.4	50.685	50.459	50.230	50.000	49.767	49.533	49.296	49.057	48.815	48.571
.3	51.598	51.376	51.152	50.926	50.698	50.467	50.235	50.000	49.763	49.524
.2	52.511	52.294	52.074	51.852	51.628	51.402	51.174	50.943	50.711	50.476
.1	53.425	53.211	52.995	52.778	52.558	52.336	52.113	51.887	51.659	51.429
.0	54.338	54.128	53.917	53.704	53.488	53.271	53.052	52.830	52.607	52.381
4.9	55.251	55.046	54.839	54.630	54.419	54.206	53.991	53.774	53.555	53.333
.8	56.164	55.963	55.760	55.556	55.349	55.140	54.930	54.717	54.502	54.286
.7	57.078	56.881	56.682	56.481	56.279	56.075	55.869	55.660	55.450	55.238
.6	57.991	57.798	57.604	57.407	57.209	57.009	56.808	56.604	56.398	56.190
.5	58.904	58.716	58.525	58.333	58.140	57.944	57.746	57.547	57.346	57.143
.4	59.817	59.633	59.447	59.259	59.070	58.879	58.685	58.491	58.294	58.095
.3	60.731	60.550	60.369	60.185	60.000	59.813	59.624	59.434	59.242	59.048
.2	61.644	61.468	61.290	61.111	60.930	60.748	60.563	60.377	60.190	60.000
.1	62.557	62.385	62.212	62.037	61.860	61.682	61.502	61.321	61.137	60.952
.0	63.470	63.303	63.134	62.963	62.791	62.617	62.441	62.264	62.085	61.905
3.9	64.384	64.220	64.055	63.889	63.721	63.551	63.380	63.208	63.033	62.857
.8	65.297	65.138	64.977	64.815	64.651	64.486	64.319	64.151	63.981	63.810
.7	66.210	66.055	65.899	65.741	65.581	65.421	65.258	65.094	64.929	64.762
.6	67.123	66.972	66.820	66.667	66.512	66.355	66.197	66.038	65.877	65.714
.5	68.037	67.890	67.742	67.593	67.442	67.290	67.136	66.981	66.825	66.667
.4	68.950	68.807	68.664	68.519	68.372	68.224	68.075	67.925	67.773	67.619
.3	69.863	69.725	69.585	69.444	69.302	69.159	69.014	68.868	68.720	68.571
.2	70.776	70.642	70.507	70.370	70.233	70.093	69.953	69.811	69.668	69.524
.1	71.689	71.560	71.429	71.296	71.163	71.028	70.892	70.755	70.616	70.476
.0	72.603	72.477	72.350	72.222	72.093	71.963	71.831	71.698	71.564	71.429
2.9	73.516	73.394	73.272	73.148	73.023	72.897	72.770	72.642	72.512	72.381
.8	74.429	74.312	74.194	74.074	73.953	73.832	73.709	73.585	73.460	73.333
.7	75.342	75.229	75.115	75.000	74.884	74.766	74.648	74.528	74.408	74.286
.6	76.256	76.147	76.037	75.926	75.814	75.701	75.587	75.472	75.355	75.238
.5	77.169	77.064	76.959	76.852	76.744	76.636	76.526	76.415	76.303	76.190
.4	78.082	77.982	77.880	77.778	77.674	77.570	77.465	77.358	77.251	77.143
.3	78.995	78.899	78.802	78.704	78.605	78.505	78.404	78.302	78.199	78.095
.2	79.909	79.817	79.724	79.630	79.535	79.439	79.343	79.245	79.147	79.048
.1	80.822	80.734	80.645	80.556	80.465	80.374	80.282	80.189	80.095	80.000
.0	81.735	81.651	81.567	81.481	81.395	81.308	81.221	81.132	81.043	80.952

$$1 + a_x$$

IO	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
1'9	82'648	82'569	82'488	82'407	82'326	82'243	82'160	82'075	81'991	81'905
'8	83'562	83'486	83'410	83'333	83'256	83'178	83'099	83'019	82'938	82'857
'7	84'475	84'404	84'332	84'259	84'186	84'112	84'038	83'962	83'886	83'810
'6	85'388	85'321	85'253	85'185	85'116	85'047	84'977	84'906	84'834	84'762
'5	86'301	86'239	86'175	86'111	86'047	85'981	85'915	85'849	85'782	85'714
'4	87'215	87'156	87'097	87'037	86'977	86'916	86'854	86'792	86'730	86'667
'3	88'128	88'073	88'018	87'963	87'907	87'850	87'793	87'736	87'678	87'619
'2	89'041	88'991	88'940	88'889	88'837	88'785	88'732	88'679	88'626	88'571
'1	89'954	89'908	89'862	89'815	89'767	89'720	89'671	89'623	89'573	89'524
'0	90'868	90'826	90'783	90'741	90'698	90'654	90'610	90'566	90'521	90'476
'01	'091	'092	'092	'093	'093	'093	'094	'094	'095	'095
'02	'183	'183	'184	'185	'186	'187	'188	'189	'190	'190
'03	'274	'275	'276	'278	'279	'280	'282	'283	'284	'286
'04	'365	'367	'369	'370	'372	'374	'376	'377	'379	'381
'05	'457	'459	'461	'463	'465	'467	'469	'472	'474	'476
'06	'548	'550	'553	'556	'558	'561	'563	'566	'569	'571
'07	'639	'642	'645	'648	'651	'654	'657	'660	'664	'667
'08	'731	'734	'737	'741	'744	'748	'751	'755	'758	'762
'09	'822	'826	'829	'833	'837	'841	'845	'849	'853	'857

IO	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
10'4	'478	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	1'435	'962	'483	'000	'000	'000	'000	'000	'000	'000
'2	2'392	1'923	1'449	'971	'488	'000	'000	'000	'000	'000
'1	3'349	2'885	2'415	1'942	1'463	'980	'493	'000	'000	'000
'0	4'306	3'846	3'382	2'913	2'439	1'961	1'478	'990	'498	'000
9'9	5'263	4'808	4'348	3'883	3'415	2'941	2'463	1'980	1'493	1'000
'8	6'220	5'769	5'314	4'854	4'390	3'922	3'448	2'970	2'488	2'000
'7	7'177	6'731	6'280	5'825	5'366	4'902	4'433	3'960	3'483	3'000
'6	8'134	7'692	7'246	6'796	6'341	5'882	5'419	4'950	4'478	4'000
'5	9'091	8'654	8'213	7'767	7'317	6'863	6'404	5'941	5'473	5'000
'4	10'048	9'615	9'179	8'738	8'293	7'843	7'389	6'931	6'468	6'000
'3	11'005	10'577	10'145	9'709	9'268	8'824	8'374	7'921	7'463	7'000
'2	11'962	11'538	11'111	10'680	10'244	9'804	9'360	8'911	8'458	8'000
'1	12'919	12'500	12'077	11'650	11'220	10'784	10'345	9'901	9'453	9'000
'0	13'876	13'462	13'043	12'621	12'195	11'765	11'330	10'891	10'448	10'000
'01	'096	'096	'097	'097	'098	'098	'099	'099	'100	'100
'02	'191	'192	'193	'194	'195	'196	'197	'198	'199	'200
'03	'287	'288	'290	'291	'293	'294	'296	'297	'299	'300
'04	'383	'385	'386	'388	'390	'392	'394	'396	'398	'400
'05	'478	'481	'483	'485	'488	'490	'493	'495	'498	'500
'06	'574	'577	'580	'583	'585	'588	'591	'594	'597	'600
'07	'670	'673	'676	'680	'683	'686	'690	'693	'697	'700
'08	'766	'769	'773	'777	'780	'784	'788	'792	'796	'800
'09	'861	'865	'870	'874	'878	'882	'887	'891	'896	'900

$1 + \alpha_x$ 

IO	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + \alpha_{x+n}$										
8·9	14·833	14·423	14·010	13·592	13·171	12·745	12·315	11·881	11·443	11·000
·8	15·789	15·385	14·976	14·563	14·146	13·725	13·300	12·871	12·438	12·000
·7	16·746	16·346	15·942	15·534	15·122	14·706	14·286	13·861	13·433	13·000
·6	17·703	17·308	16·908	16·505	16·098	15·686	15·271	14·851	14·428	14·000
·5	18·660	18·269	17·874	17·476	17·073	16·667	16·256	15·842	15·423	15·000
·4	19·617	19·231	18·841	18·447	18·049	17·647	17·241	16·832	16·418	16·000
·3	20·574	20·192	19·807	19·417	19·024	18·627	18·227	17·822	17·413	17·000
·2	21·531	21·154	20·773	20·388	20·000	19·608	19·212	18·812	18·408	18·000
·1	22·488	22·115	21·739	21·359	20·976	20·588	20·197	19·802	19·403	19·000
·0	23·445	23·077	22·705	22·330	21·951	21·569	21·182	20·792	20·398	20·000
7·9	24·402	24·038	23·671	23·301	22·927	22·549	22·167	21·782	21·393	21·000
·8	25·359	25·000	24·638	24·272	23·902	23·529	23·153	22·772	22·388	22·000
·7	26·316	25·962	25·604	25·243	24·878	24·510	24·138	23·762	23·383	23·000
·6	27·273	26·923	26·570	26·214	25·854	25·490	25·123	24·752	24·378	24·000
·5	28·230	27·885	27·536	27·184	26·829	26·471	26·108	25·743	25·373	25·000
·4	29·187	28·846	28·502	28·155	27·805	27·451	27·094	26·733	26·368	26·000
·3	30·144	29·808	29·469	29·126	28·780	28·431	28·079	27·723	27·363	27·000
·2	31·100	30·769	30·435	30·097	29·756	29·412	29·064	28·713	28·358	28·000
·1	32·057	31·731	31·401	31·068	30·732	30·392	30·049	29·703	29·353	29·000
·0	33·014	32·692	32·367	32·039	31·707	31·373	31·034	30·693	30·348	30·000
6·9	33·971	33·654	33·333	33·010	32·683	32·353	32·020	31·683	31·343	31·000
·8	34·928	34·615	34·300	33·981	33·659	33·333	33·005	32·673	32·338	32·000
·7	35·885	35·577	35·266	34·951	34·634	34·314	33·990	33·663	33·333	33·000
·6	36·842	36·538	36·232	35·922	35·610	35·294	34·975	34·653	34·328	34·000
·5	37·799	37·500	37·198	36·893	36·585	36·275	35·961	35·644	35·323	35·000
·4	38·756	38·462	38·164	37·864	37·561	37·255	36·946	36·634	36·318	36·000
·3	39·713	39·423	39·130	38·835	38·537	38·235	37·931	37·624	37·313	37·000
·2	40·670	40·385	40·097	39·806	39·512	39·216	38·916	38·614	38·308	38·000
·1	41·627	41·346	41·063	40·777	40·488	40·196	39·901	39·604	39·303	39·000
·0	42·584	42·308	42·029	41·748	41·463	41·176	40·887	40·594	40·299	40·000
5·9	43·541	43·269	42·995	42·718	42·439	42·157	41·872	41·584	41·294	41·000
·8	44·498	44·231	43·961	43·689	43·415	43·137	42·857	42·574	42·289	42·000
·7	45·455	45·192	44·928	44·660	44·390	44·118	43·842	43·564	43·284	43·000
·6	46·411	46·154	45·894	45·631	45·366	45·098	44·828	44·554	44·279	44·000
·5	47·368	47·115	46·860	46·602	46·341	46·078	45·813	45·545	45·274	45·000
·4	48·325	48·077	47·826	47·573	47·317	47·059	46·798	46·535	46·269	46·000
·3	49·282	49·038	48·792	48·544	48·293	48·039	47·783	47·525	47·264	47·000
·2	50·239	50·000	49·758	49·515	49·268	49·020	48·768	48·515	48·259	48·000
·1	51·196	50·962	50·725	50·485	50·244	50·000	49·754	49·505	49·254	49·000
·0	52·153	51·923	51·691	51·456	51·220	50·980	50·739	50·495	50·249	50·000
4·9	53·110	52·885	52·657	52·427	52·195	51·961	51·724	51·485	51·244	51·000
·8	54·067	53·846	53·623	53·398	53·171	52·941	52·709	52·475	52·239	52·000
·7	55·024	54·808	54·589	54·369	54·146	53·922	53·695	53·465	53·234	53·000
·6	55·981	55·769	55·556	55·340	55·122	54·902	54·680	54·455	54·229	54·000
·5	56·938	56·731	56·522	56·311	56·098	55·882	55·665	55·446	55·224	55·000



$1 + a_x$ 

IO	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
4.4	57.895	57.692	57.488	57.282	57.073	56.863	56.650	56.436	56.219	56.000
.3	58.852	58.654	58.454	58.252	58.049	57.843	57.635	57.426	57.214	57.000
.2	59.809	59.615	59.420	59.223	59.024	58.824	58.621	58.416	58.209	58.000
.1	60.766	60.577	60.386	60.194	60.000	59.804	59.606	59.406	59.204	59.000
.0	61.722	61.538	61.353	61.165	60.976	60.784	60.591	60.396	60.199	60.000
3.9	62.679	62.500	62.319	62.136	61.951	61.765	61.576	61.386	61.194	61.000
.8	63.636	63.462	63.285	63.107	62.927	62.745	62.562	62.376	62.189	62.000
.7	64.593	64.423	64.251	64.078	63.902	63.725	63.547	63.366	63.184	63.000
.6	65.550	65.385	65.217	65.049	64.878	64.706	64.532	64.356	64.179	64.000
.5	66.507	66.346	66.184	66.019	65.854	65.686	65.517	65.347	65.174	65.000
.4	67.464	67.308	67.150	66.990	66.829	66.667	66.502	66.337	66.169	66.000
.3	68.421	68.269	68.116	67.961	67.805	67.647	67.488	67.327	67.164	67.000
.2	69.378	69.231	69.082	68.932	68.780	68.627	68.473	68.317	68.159	68.000
.1	70.335	70.192	70.048	69.903	69.756	69.608	69.458	69.307	69.154	69.000
.0	71.292	71.154	71.014	70.874	70.732	70.588	70.443	70.297	70.149	70.000
2.9	72.249	72.115	71.981	71.845	71.707	71.569	71.429	71.287	71.144	71.000
.8	73.206	73.077	72.947	72.816	72.683	72.549	72.414	72.277	72.139	72.000
.7	74.163	74.038	73.913	73.786	73.659	73.529	73.399	73.267	73.134	73.000
.6	75.120	75.000	74.879	74.757	74.634	74.510	74.384	74.257	74.129	74.000
.5	76.077	75.962	75.845	75.728	75.610	75.490	75.369	75.248	75.124	75.000
.4	77.033	76.923	76.812	76.699	76.585	76.471	76.355	76.238	76.119	76.000
.3	77.990	77.885	77.778	77.670	77.561	77.451	77.340	77.228	77.114	77.000
.2	78.947	78.846	78.744	78.641	78.537	78.431	78.325	78.218	78.109	78.000
.1	79.904	79.808	79.710	79.612	79.512	79.412	79.310	79.208	79.104	79.000
.0	80.861	80.769	80.676	80.583	80.488	80.392	80.296	80.198	80.100	80.000
1.9	81.818	81.731	81.643	81.553	81.463	81.373	81.281	81.188	81.095	81.000
.8	82.775	82.692	82.609	82.524	82.439	82.353	82.266	82.178	82.090	82.000
.7	83.732	83.654	83.575	83.495	83.415	83.333	83.251	83.168	83.085	83.000
.6	84.689	84.615	84.541	84.466	84.390	84.314	84.236	84.158	84.080	84.000
.5	85.646	85.577	85.507	85.437	85.366	85.294	85.222	85.149	85.075	85.000
.4	86.603	86.538	86.473	86.408	86.341	86.275	86.207	86.139	86.070	86.000
.3	87.560	87.500	87.440	87.379	87.317	87.255	87.192	87.129	87.065	87.000
.2	88.517	88.462	88.406	88.350	88.293	88.235	88.177	88.119	88.060	88.000
.1	89.474	89.423	89.372	89.320	89.268	89.216	89.163	89.109	89.055	89.000
.0	90.431	90.385	90.338	90.291	90.244	90.196	90.148	90.099	90.050	90.000
.01	.096	.096	.097	.097	.098	.098	.099	.099	.100	.100
.02	.191	.192	.193	.194	.195	.196	.197	.198	.199	.200
.03	.287	.288	.290	.291	.293	.294	.296	.297	.299	.300
.04	.383	.385	.386	.388	.390	.392	.394	.396	.398	.400
.05	.478	.481	.483	.485	.488	.490	.493	.495	.498	.500
.06	.574	.577	.580	.583	.585	.588	.591	.594	.597	.600
.07	.670	.673	.676	.680	.683	.686	.690	.693	.697	.700
.08	.766	.769	.773	.777	.780	.784	.788	.792	.796	.800
.09	.861	.865	.870	.874	.878	.882	.887	.891	.896	.900



$1 + a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
9'9	'503	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	1'508	1'010	'508	'000	'000	'000	'000	'000	'000	'000
'7	2'513	2'020	1'523	1'020	'513	'000	'000	'000	'000	'000
'6	3'518	3'030	2'538	2'041	1'538	1'031	'518	'000	'000	'000
'5	4'523	4'040	3'553	3'061	2'564	2'062	1'554	1'042	'524	'000
'4	5'528	5'051	4'569	4'082	3'590	3'093	2'591	2'083	1'571	1'053
'3	6'533	6'061	5'584	5'102	4'615	4'124	3'627	3'125	2'618	2'105
'2	7'538	7'071	6'599	6'122	5'641	5'155	4'663	4'167	3'665	3'158
'1	8'543	8'081	7'614	7'143	6'667	6'186	5'699	5'208	4'712	4'211
'0	9'548	9'091	8'629	8'163	7'692	7'216	6'736	6'250	5'759	5'263
8'9	10'553	10'101	9'645	9'184	8'718	8'247	7'772	7'292	6'806	6'316
'8	11'558	11'111	10'660	10'204	9'744	9'278	8'808	8'333	7'853	7'368
'7	12'563	12'121	11'675	11'224	10'769	10'309	9'845	9'375	8'901	8'421
'6	13'568	13'131	12'690	12'245	11'795	11'340	10'881	10'417	9'948	9'474
'5	14'573	14'141	13'706	13'265	12'821	12'371	11'917	11'458	10'995	10'526
'4	15'578	15'152	14'721	14'286	13'846	13'402	12'953	12'500	12'042	11'579
'3	16'583	16'162	15'736	15'306	14'872	14'433	13'990	13'542	13'089	12'632
'2	17'588	17'172	16'751	16'327	15'897	15'464	15'026	14'583	14'136	13'684
'1	18'593	18'182	17'766	17'347	16'923	16'495	16'062	15'625	15'183	14'737
'0	19'598	19'192	18'782	18'367	17'949	17'526	17'098	16'667	16'230	15'789
7'9	20'603	20'202	19'797	19'388	18'974	18'557	18'135	17'708	17'277	16'842
'8	21'608	21'212	20'812	20'408	20'000	19'588	19'171	18'750	18'325	17'895
'7	22'613	22'222	21'827	21'429	21'026	20'619	20'207	19'792	19'372	18'947
'6	23'618	23'232	22'843	22'449	22'051	21'649	21'244	20'833	20'419	20'000
'5	24'623	24'242	23'858	23'469	23'077	22'680	22'280	21'875	21'466	21'053
'4	25'628	25'253	24'873	24'490	24'103	23'711	23'316	22'917	22'513	22'105
'3	26'633	26'263	25'888	25'510	25'128	24'742	24'352	23'958	23'560	23'158
'2	27'638	27'273	26'904	26'531	26'154	25'773	25'389	25'000	24'607	24'211
'1	28'643	28'283	27'919	27'551	27'179	26'804	26'425	26'042	25'654	25'263
'0	29'648	29'293	28'934	28'571	28'205	27'835	27'461	27'083	26'702	26'316
6'9	30'653	30'303	29'949	29'592	29'231	28'866	28'497	28'125	27'749	27'368
'8	31'658	31'313	30'964	30'612	30'256	29'897	29'534	29'167	28'796	28'421
'7	32'663	32'323	31'980	31'633	31'282	30'928	30'570	30'208	29'843	29'474
'6	33'668	33'333	32'995	32'653	32'308	31'959	31'606	31'250	30'890	30'526
'5	34'673	34'343	34'010	33'673	33'333	32'990	32'642	32'292	31'937	31'579
'4	35'678	35'354	35'025	34'694	34'359	34'021	33'679	33'333	32'984	32'632
'3	36'683	36'364	36'041	35'714	35'385	35'052	34'715	34'375	34'031	33'684
'2	37'688	37'374	37'056	36'735	36'410	36'082	35'751	35'417	35'079	34'737
'1	38'693	38'384	38'071	37'755	37'436	37'113	36'788	36'458	36'126	35'789
'0	39'698	39'394	39'086	38'776	38'462	38'144	37'824	37'500	37'173	36'842
5'9	40'704	40'404	40'102	39'796	39'487	39'175	38'860	38'542	38'220	37'895
'8	41'709	41'414	41'117	40'816	40'513	40'206	39'896	39'583	39'267	38'947
'7	42'714	42'424	42'132	41'837	41'538	41'237	40'933	40'625	40'314	40'000
'6	43'719	43'434	43'147	42'857	42'564	42'268	41'969	41'667	41'361	41'053
'5	44'724	44'444	44'162	43'878	43'590	43'299	43'005	42'708	42'408	42'105
'4	45'729	45'455	45'178	44'898	44'615	44'330	44'041	43'750	43'455	43'158
'3	46'734	46'465	46'193	45'918	45'641	45'361	45'078	44'792	44'503	44'211
'2	47'739	47'475	47'208	46'939	46'667	46'392	46'114	45'833	45'550	45'263
'1	48'744	48'485	48'223	47'959	47'692	47'423	47'150	46'875	46'597	46'316
'0	49'749	49'495	49'239	48'980	48'718	48'454	48'187	47'917	47'644	47'368

$1 + a_x$ 

9	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
4·9	50·754	50·505	50·254	50·000	49·744	49·485	49·223	48·958	48·691	48·421
·8	51·759	51·515	51·269	51·020	50·769	50·515	50·259	50·000	49·738	49·474
·7	52·764	52·525	52·284	52·041	51·795	51·546	51·295	51·042	50·785	50·526
·6	53·769	53·535	53·299	53·061	52·821	52·577	52·332	52·083	51·832	51·579
·5	54·774	54·545	54·315	54·082	53·846	53·608	53·368	53·125	52·880	52·632
·4	55·779	55·556	55·330	55·102	54·872	54·639	54·404	54·167	53·927	53·684
·3	56·784	56·566	56·345	56·122	55·897	55·670	55·440	55·208	54·974	54·737
·2	57·789	57·576	57·360	57·143	56·923	56·701	56·477	56·250	56·021	55·789
·1	58·794	58·586	58·376	58·163	57·949	57·732	57·513	57·292	57·068	56·842
·0	59·799	59·596	59·391	59·184	58·974	58·763	58·549	58·333	58·115	57·895
3·9	60·804	60·606	60·406	60·204	60·000	59·794	59·585	59·375	59·162	58·947
·8	61·809	61·616	61·421	61·224	61·026	60·825	60·622	60·417	60·209	60·000
·7	62·814	62·626	62·437	62·245	62·051	61·856	61·658	61·458	61·257	61·053
·6	63·819	63·636	63·452	63·265	63·077	62·887	62·694	62·500	62·304	62·105
·5	64·824	64·646	64·467	64·286	64·103	63·918	63·731	63·542	63·351	63·158
·4	65·829	65·657	65·482	65·306	65·128	64·948	64·767	64·583	64·398	64·211
·3	66·834	66·667	66·497	66·327	66·154	65·979	65·803	65·625	65·445	65·263
·2	67·839	67·677	67·513	67·347	67·179	67·010	66·839	66·667	66·492	66·316
·1	68·844	68·687	68·528	68·367	68·205	68·041	67·876	67·708	67·539	67·368
·0	69·849	69·697	69·543	69·388	69·231	69·072	68·912	68·750	68·586	68·421
2·9	70·854	70·707	70·558	70·408	70·256	70·103	69·948	69·792	69·633	69·474
·8	71·859	71·717	71·574	71·429	71·282	71·134	70·984	70·833	70·681	70·526
·7	72·864	72·727	72·589	72·449	72·308	72·165	72·021	71·875	71·728	71·579
·6	73·869	73·737	73·604	73·469	73·333	73·196	73·057	72·917	72·775	72·632
·5	74·874	74·747	74·619	74·490	74·359	74·227	74·093	73·958	73·822	73·684
·4	75·879	75·758	75·634	75·510	75·385	75·258	75·130	75·000	74·869	74·737
·3	76·884	76·768	76·650	76·531	76·410	76·289	76·166	76·042	75·916	75·790
·2	77·889	77·778	77·665	77·551	77·436	77·320	77·202	77·083	76·963	76·842
·1	78·894	78·788	78·680	78·571	78·462	78·351	78·238	78·125	78·010	77·895
·0	79·899	79·798	79·695	79·592	79·487	79·381	79·275	79·167	79·058	78·947
1·9	80·905	80·808	80·711	80·612	80·513	80·412	80·311	80·208	80·105	80·000
·8	81·910	81·818	81·726	81·633	81·538	81·443	81·347	81·250	81·152	81·053
·7	82·915	82·828	82·741	82·653	82·564	82·474	82·383	82·292	82·199	82·105
·6	83·920	83·838	83·756	83·673	83·590	83·505	83·420	83·333	83·246	83·158
·5	84·925	84·848	84·772	84·694	84·615	84·536	84·456	84·375	84·293	84·211
·4	85·930	85·859	85·787	85·714	85·641	85·567	85·492	85·417	85·340	85·263
·3	86·935	86·869	86·802	86·735	86·667	86·598	86·528	86·458	86·387	86·316
·2	87·940	87·879	87·817	87·755	87·692	87·629	87·565	87·500	87·435	87·368
·1	88·945	88·889	88·832	88·775	88·718	88·660	88·601	88·542	88·482	88·421
·0	89·950	89·899	89·848	89·796	89·744	89·691	89·637	89·583	89·529	89·474
·01	·101	·101	·102	·102	·103	·103	·104	·104	·105	·105
·02	·201	·202	·203	·204	·205	·206	·207	·208	·209	·211
·03	·302	·303	·305	·306	·308	·309	·311	·313	·314	·316
·04	·402	·404	·406	·408	·410	·412	·415	·417	·419	·421
·05	·503	·505	·508	·510	·513	·515	·518	·521	·524	·526
·06	·603	·606	·609	·612	·615	·619	·622	·625	·628	·632
·07	·704	·707	·711	·714	·718	·722	·725	·729	·733	·737
·08	·804	·808	·812	·816	·821	·825	·829	·833	·838	·842
·09	·905	·909	·914	·918	·923	·928	·933	·938	·942	·947

$1+a_x$ 

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1+a_{x-1}$										
9'4	1'529	1'000	1'000	1'000	1'000	1'000	1'000	1'000	1'000	1'000
'3	1'587	1'064	1'535	1'000	1'000	1'000	1'000	1'000	1'000	1'000
'2	2'646	2'128	1'604	1'075	1'541	1'000	1'000	1'000	1'000	1'000
'1	3'704	3'191	2'674	2'151	1'622	1'087	1'546	1'000	1'000	1'000
'0	4'762	4'255	3'743	3'226	2'703	2'174	1'639	1'099	1'552	1'000
8'9	5'820	5'319	4'813	4'301	3'784	3'261	2'732	2'198	1'657	1'111
'8	6'878	6'383	5'882	5'376	4'865	4'348	3'825	3'297	2'762	2'222
'7	7'937	7'447	6'952	6'452	5'946	5'435	4'918	4'396	3'867	3'333
'6	8'995	8'511	8'021	7'527	7'027	6'522	6'011	5'495	4'972	4'444
'5	10'053	9'574	9'091	8'602	8'108	7'609	7'104	6'593	6'077	5'556
'4	11'111	10'638	10'160	9'677	9'189	8'696	8'197	7'692	7'182	6'667
'3	12'169	11'702	11'230	10'753	10'270	9'783	9'290	8'791	8'287	7'778
'2	13'228	12'766	12'299	11'828	11'351	10'870	10'383	9'890	9'392	8'889
'1	14'286	13'830	13'369	12'903	12'432	11'957	11'475	10'989	10'497	10'000
'0	15'344	14'894	14'439	13'978	13'514	13'043	12'568	12'088	11'602	11'111
7'9	16'402	15'957	15'508	15'054	14'595	14'130	13'661	13'187	12'707	12'222
'8	17'460	17'021	16'578	16'129	15'676	15'217	14'754	14'286	13'812	13'333
'7	18'519	18'085	17'647	17'204	16'757	16'304	15'847	15'385	14'917	14'444
'6	19'577	19'149	18'717	18'280	17'838	17'391	16'940	16'484	16'022	15'556
'5	20'635	20'213	19'786	19'355	18'919	18'478	18'033	17'582	17'127	16'667
'4	21'693	21'277	20'856	20'430	20'000	19'565	19'126	18'681	18'232	17'778
'3	22'751	22'340	21'925	21'505	21'081	20'652	20'219	19'780	19'337	18'889
'2	23'810	23'404	22'995	22'581	22'162	21'739	21'311	20'879	20'442	20'000
'1	24'868	24'468	24'064	23'656	23'243	22'826	22'404	21'978	21'547	21'111
'0	25'926	25'532	25'134	24'731	24'324	23'913	23'497	23'077	22'652	22'222
6'9	26'984	26'596	26'203	25'806	25'405	25'000	24'590	24'176	23'757	23'333
'8	28'042	27'660	27'273	26'882	26'486	26'087	25'683	25'275	24'862	24'444
'7	29'101	28'723	28'342	27'957	27'568	27'174	26'776	26'374	25'967	25'556
'6	30'159	29'787	29'412	29'032	28'649	28'261	27'869	27'473	27'072	26'667
'5	31'217	30'851	30'481	30'108	29'730	29'348	28'962	28'571	28'177	27'778
'4	32'275	31'915	31'551	31'183	30'811	30'435	30'055	29'670	29'282	28'889
'3	33'333	32'979	32'620	32'258	31'892	31'522	31'148	30'769	30'387	30'000
'2	34'392	34'043	33'690	33'333	32'973	32'609	32'240	31'868	31'492	31'111
'1	35'450	35'106	34'759	34'409	34'054	33'696	33'333	32'967	32'597	32'222
'0	36'508	36'170	35'829	35'484	35'135	34'783	34'426	34'066	33'702	33'333
5'9	37'566	37'234	36'898	36'559	36'216	35'870	35'519	35'165	34'807	34'444
'8	38'624	38'298	37'968	37'634	37'297	36'957	36'612	36'264	35'912	35'556
'7	39'683	39'362	39'037	38'710	38'378	38'043	37'705	37'363	37'017	36'667
'6	40'741	40'426	40'107	39'785	39'459	39'130	38'798	38'462	38'122	37'778
'5	41'799	41'489	41'176	40'860	40'541	40'217	39'891	39'560	39'227	38'889
'4	42'857	42'553	42'246	41'935	41'622	41'304	40'984	40'659	40'331	40'000
'3	43'915	43'617	43'316	43'011	42'703	42'391	42'076	41'758	41'436	41'111
'2	44'974	44'681	44'385	44'086	43'784	43'478	43'169	42'857	42'541	42'222
'1	46'032	45'745	45'455	45'161	44'865	44'565	44'262	43'956	43'646	43'333
'0	47'090	46'809	46'524	46'237	45'946	45'652	45'355	45'055	44'751	44'444
4'9	48'148	47'872	47'594	47'312	47'027	46'739	46'448	46'154	45'856	45'556
'8	49'206	48'936	48'663	48'387	48'108	47'826	47'541	47'253	46'961	46'667
'7	50'265	50'000	49'733	49'462	49'189	48'913	48'634	48'352	48'066	47'778
'6	51'323	51'064	50'802	50'538	50'270	50'000	49'727	49'451	49'171	48'889
'5	52'381	52'128	51'872	51'613	51'351	51'087	50'820	50'549	50'276	50'000



$$1 + a_x$$

9	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
4.4	53.439	53.192	52.941	52.688	52.432	52.174	51.913	51.648	51.381	51.111
3	54.497	54.255	54.011	53.763	53.514	53.261	53.005	52.747	52.486	52.222
2	55.556	55.319	55.080	54.839	54.595	54.348	54.098	53.846	53.591	53.333
1	56.614	56.383	56.150	55.914	55.676	55.435	55.191	54.945	54.696	54.444
0	57.672	57.447	57.219	56.989	56.757	56.522	56.284	56.044	55.801	55.556
3.9	58.730	58.511	58.289	58.065	57.838	57.609	57.377	57.143	56.906	56.667
8	59.788	59.574	59.358	59.140	58.919	58.696	58.470	58.242	58.011	57.778
7	60.847	60.638	60.428	60.215	60.000	59.783	59.563	59.341	59.116	58.889
6	61.905	61.702	61.497	61.290	61.081	60.870	60.656	60.440	60.221	60.000
5	62.963	62.766	62.567	62.366	62.162	61.957	61.749	61.538	61.326	61.111
4	64.021	63.830	63.636	63.441	63.243	63.044	62.842	62.637	62.431	62.222
3	65.079	64.894	64.706	64.516	64.324	64.130	63.934	63.736	63.536	63.333
2	66.138	65.957	65.775	65.591	65.405	65.217	65.027	64.835	64.641	64.444
1	67.196	67.021	66.845	66.667	66.486	66.304	66.120	65.934	65.746	65.556
0	68.254	68.085	67.914	67.742	67.568	67.391	67.213	67.033	66.851	66.667
2.9	69.312	69.149	68.984	68.817	68.649	68.478	68.306	68.132	67.956	67.778
8	70.370	70.213	70.053	69.892	69.730	69.565	69.399	69.231	69.061	68.889
7	71.429	71.277	71.123	70.968	70.811	70.652	70.492	70.330	70.166	70.000
6	72.487	72.340	72.193	72.043	71.892	71.739	71.585	71.429	71.271	71.111
5	73.545	73.404	73.262	73.118	72.973	72.826	72.678	72.527	72.376	72.222
4	74.603	74.468	74.332	74.194	74.054	73.913	73.770	73.626	73.481	73.333
3	75.661	75.532	75.401	75.269	75.135	75.000	74.863	74.725	74.586	74.444
2	76.720	76.596	76.471	76.344	76.216	76.087	75.956	75.824	75.691	75.556
1	77.778	77.660	77.540	77.419	77.297	77.174	77.049	76.923	76.796	76.667
0	78.836	78.723	78.610	78.495	78.378	78.261	78.142	78.022	77.901	77.778
1.9	79.894	79.787	79.679	79.570	79.459	79.348	79.235	79.121	79.005	78.889
8	80.952	80.851	80.749	80.645	80.541	80.435	80.328	80.220	80.110	80.000
7	82.011	81.915	81.818	81.720	81.622	81.522	81.421	81.319	81.215	81.111
6	83.069	82.979	82.888	82.796	82.703	82.609	82.514	82.418	82.320	82.222
5	84.127	84.043	83.957	83.871	83.784	83.696	83.607	83.516	83.425	83.333
4	85.185	85.106	85.027	84.946	84.865	84.783	84.699	84.615	84.530	84.444
3	86.243	86.170	86.096	86.022	85.946	85.870	85.792	85.714	85.635	85.556
2	87.302	87.234	87.166	87.097	87.027	86.957	86.885	86.813	86.740	86.667
1	88.360	88.298	88.235	88.172	88.108	88.044	87.978	87.912	87.845	87.778
0	89.418	89.362	89.305	89.247	89.189	89.130	89.071	89.011	88.950	88.889
0.1	.106	.106	.107	.108	.108	.109	.109	.110	.110	.111
0.2	.212	.213	.214	.215	.216	.217	.219	.220	.221	.222
0.3	.317	.319	.321	.323	.324	.326	.328	.330	.331	.333
0.4	.423	.426	.428	.430	.432	.435	.437	.440	.442	.444
0.5	.529	.532	.535	.538	.541	.543	.546	.549	.552	.556
0.6	.635	.638	.642	.645	.649	.652	.656	.659	.663	.667
0.7	.741	.745	.749	.753	.757	.761	.765	.769	.773	.778
0.8	.847	.851	.856	.860	.865	.870	.874	.879	.884	.889
0.9	.952	.957	.963	.968	.973	.978	.984	.989	.994	1.000



$1 + a_x$ 

8	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
8'9	'559	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	1'676	1'124	'565	'000	'000	'000	'000	'000	'000	'000
'7	2'793	2'247	1'695	1'136	'571	'000	'000	'000	'000	'000
'6	3'911	3'371	2'825	2'273	1'714	1'149	'578	'000	'000	'000
'5	5'028	4'494	3'955	3'409	2'857	2'299	1'734	1'163	'585	'000
'4	6'145	5'618	5'085	4'545	4'000	3'448	2'890	2'326	1'754	1'176
'3	7'263	6'742	6'215	5'682	5'143	4'598	4'046	3'488	2'924	2'353
'2	8'380	7'865	7'345	6'818	6'286	5'747	5'202	4'651	4'094	3'529
'1	9'497	8'989	8'475	7'955	7'429	6'897	6'358	5'814	5'263	4'706
'0	10'615	10'112	9'605	9'091	8'571	8'046	7'514	6'977	6'433	5'882
7'9	11'732	11'236	10'734	10'227	9'714	9'195	8'671	8'140	7'602	7'059
'8	12'849	12'360	11'864	11'364	10'857	10'345	9'827	9'302	8'772	8'235
'7	13'966	13'483	12'994	12'500	12'000	11'494	10'983	10'465	9'942	9'412
'6	15'084	14'607	14'124	13'636	13'143	12'644	12'139	11'628	11'111	10'588
'5	16'201	15'730	15'254	14'773	14'286	13'793	13'295	12'791	12'281	11'765
'4	17'318	16'854	16'384	15'909	15'429	14'943	14'451	13'953	13'450	12'941
'3	18'436	17'978	17'514	17'045	16'571	16'092	15'607	15'116	14'620	14'118
'2	19'553	19'101	18'644	18'182	17'714	17'241	16'763	16'279	15'789	15'294
'1	20'670	20'225	19'774	19'318	18'857	18'391	17'919	17'442	16'959	16'471
'0	21'788	21'348	20'904	20'455	20'000	19'540	19'075	18'605	18'129	17'647
6'9	22'905	22'472	22'034	21'591	21'143	20'690	20'231	19'767	19'298	18'824
'8	24'022	23'596	23'164	22'727	22'286	21'839	21'387	20'930	20'468	20'000
'7	25'140	24'719	24'294	23'864	23'429	22'989	22'543	22'093	21'637	21'176
'6	26'257	25'843	25'424	25'000	24'571	24'138	23'699	23'256	22'807	22'353
'5	27'374	26'966	26'554	26'136	25'714	25'287	24'855	24'419	23'977	23'529
'4	28'492	28'090	27'684	27'273	26'857	26'437	26'012	25'581	25'146	24'706
'3	29'609	29'213	28'814	28'409	28'000	27'586	27'168	26'744	26'316	25'882
'2	30'726	30'337	29'944	29'545	29'143	28'736	28'324	27'907	27'485	27'059
'1	31'844	31'461	31'073	30'682	30'286	29'885	29'480	29'070	28'655	28'235
'0	32'961	32'584	32'203	31'818	31'429	31'034	30'636	30'233	29'825	29'412
5'9	34'078	33'708	33'333	32'955	32'571	32'184	31'792	31'395	30'994	30'588
'8	35'196	34'831	34'463	34'091	33'714	33'333	32'948	32'558	32'164	31'765
'7	36'313	35'955	35'593	35'227	34'857	34'483	34'104	33'721	33'333	32'941
'6	37'430	37'079	36'723	36'364	36'000	35'632	35'260	34'884	34'503	34'118
'5	38'547	38'202	37'853	37'500	37'143	36'782	36'416	36'047	35'673	35'294
'4	39'665	39'326	38'983	38'636	38'286	37'931	37'572	37'209	36'842	36'471
'3	40'782	40'449	40'113	39'773	39'429	39'080	38'728	38'372	38'012	37'647
'2	41'899	41'573	41'243	40'909	40'571	40'230	39'884	39'535	39'181	38'824
'1	43'017	42'697	42'373	42'045	41'714	41'379	41'040	40'698	40'351	40'000
'0	44'134	43'820	43'503	43'182	42'857	42'529	42'197	41'860	41'520	41'176
4'9	45'251	44'944	44'633	44'318	44'000	43'678	43'353	43'023	42'690	42'353
'8	46'369	46'067	45'763	45'455	45'143	44'828	44'509	44'186	43'860	43'529
'7	47'486	47'191	46'893	46'591	46'286	45'977	45'665	45'349	45'029	44'706
'6	48'603	48'315	48'023	47'727	47'429	47'126	46'821	46'512	46'199	45'882
'5	49'721	49'438	49'153	48'864	48'571	48'276	47'977	47'674	47'368	47'059

$1 + a_x$ 

8	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
4.4	50.838	50.562	50.283	50.000	49.714	49.425	49.133	48.837	48.538	48.235
3	51.955	51.685	51.412	51.136	50.857	50.575	50.289	50.000	49.708	49.412
2	53.073	52.809	52.542	52.273	52.000	51.724	51.445	51.163	50.877	50.588
1	54.190	53.933	53.672	53.409	53.143	52.874	52.601	52.326	52.047	51.765
0	55.307	55.056	54.802	54.545	54.286	54.023	53.757	53.488	53.216	52.941
3.9	56.425	56.180	55.932	55.682	55.429	55.173	54.913	54.651	54.386	54.118
8	57.542	57.303	57.062	56.818	56.571	56.322	56.069	55.814	55.556	55.294
7	58.659	58.427	58.192	57.955	57.714	57.471	57.225	56.977	56.725	56.471
6	59.777	59.551	59.322	59.091	58.857	58.621	58.381	58.140	57.895	57.647
5	60.894	60.674	60.452	60.227	60.000	59.770	59.538	59.302	59.064	58.824
4	62.011	61.798	61.582	61.364	61.143	60.920	60.694	60.465	60.234	60.000
3	63.128	62.921	62.712	62.500	62.286	62.069	61.850	61.628	61.404	61.176
2	64.246	64.045	63.842	63.636	63.429	63.218	63.006	62.791	62.573	62.353
1	65.363	65.169	64.972	64.773	64.571	64.368	64.162	63.954	63.743	63.529
0	66.480	66.292	66.102	65.909	65.714	65.517	65.318	65.116	64.912	64.706
2.9	67.598	67.416	67.232	67.045	66.857	66.667	66.474	66.279	66.082	65.882
8	68.715	68.539	68.362	68.182	68.000	67.816	67.630	67.442	67.251	67.059
7	69.832	69.663	69.492	69.318	69.143	68.966	68.786	68.605	68.421	68.235
6	70.950	70.787	70.622	70.455	70.286	70.115	69.942	69.767	69.591	69.412
5	72.067	71.910	71.751	71.591	71.429	71.264	71.098	70.930	70.760	70.588
4	73.184	73.034	72.881	72.727	72.571	72.414	72.254	72.093	71.930	71.765
3	74.302	74.157	74.011	73.864	73.714	73.563	73.410	73.256	73.099	72.941
2	75.419	75.281	75.141	75.000	74.857	74.713	74.566	74.419	74.269	74.118
1	76.536	76.405	76.271	76.136	76.000	75.862	75.723	75.581	75.439	75.294
0	77.654	77.528	77.401	77.273	77.143	77.011	76.879	76.744	76.608	76.471
1.9	78.771	78.652	78.531	78.409	78.286	78.161	78.035	77.907	77.778	77.647
8	79.888	79.775	79.661	79.545	79.429	79.310	79.191	79.070	78.947	78.824
7	81.006	80.899	80.791	80.682	80.571	80.460	80.347	80.233	80.117	80.000
6	82.123	82.023	81.921	81.818	81.714	81.609	81.503	81.395	81.287	81.176
5	83.240	83.146	83.051	82.955	82.857	82.759	82.659	82.558	82.456	82.353
4	84.358	84.270	84.181	84.091	84.000	83.908	83.815	83.721	83.626	83.529
3	85.475	85.393	85.311	85.227	85.143	85.057	84.971	84.884	84.795	84.706
2	86.592	86.517	86.441	86.364	86.286	86.207	86.127	86.047	85.965	85.882
1	87.709	87.640	87.571	87.500	87.429	87.356	87.283	87.209	87.135	87.059
0	88.827	88.764	88.701	88.636	88.571	88.506	88.439	88.372	88.304	88.235
.01	.112	.112	.113	.114	.114	.115	.116	.116	.117	.118
.02	.223	.225	.226	.227	.229	.230	.231	.233	.234	.235
.03	.335	.337	.339	.341	.343	.345	.347	.349	.351	.353
.04	.447	.449	.452	.455	.457	.460	.462	.465	.468	.471
.05	.559	.562	.565	.568	.571	.575	.578	.581	.585	.588
.06	.670	.674	.678	.682	.686	.690	.694	.698	.702	.706
.07	.782	.787	.791	.795	.800	.805	.809	.814	.819	.824
.08	.894	.899	.904	.909	.914	.920	.925	.930	.936	.941
.09	1.006	1.011	1.017	1.023	1.029	1.034	1.040	1.047	1.053	1.059

$$1 + a_x$$

8	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
8'4	'592	'000	'000	'000	'000	'000	'000	'000	'000	'000
'3	1'775	1'190	'599	'000	'000	'000	'000	'000	'000	'000
'2	2'959	2'381	1'796	1'205	'606	'000	'000	'000	'000	'000
'1	4'142	3'571	2'994	2'410	1'818	1'220	'613	'000	'000	'000
'0	5'325	4'762	4'192	3'614	3'030	2'439	1'840	1'235	'621	'000
7'9	6'509	5'952	5'389	4'819	4'242	3'659	3'067	2'469	1'863	1'250
'8	7'692	7'143	6'587	6'024	5'455	4'878	4'294	3'704	3'106	2'500
'7	8'876	8'333	7'784	7'229	6'667	6'098	5'521	4'938	4'348	3'750
'6	10'059	9'524	8'982	8'434	7'879	7'317	6'748	6'173	5'590	5'000
'5	11'243	10'714	10'180	9'639	9'091	8'537	7'975	7'407	6'832	6'250
'4	12'426	11'905	11'377	10'843	10'303	9'756	9'202	8'642	8'075	7'500
'3	13'609	13'095	12'575	12'048	11'515	10'976	10'429	9'877	9'317	8'750
'2	14'793	14'286	13'772	13'253	12'727	12'195	11'656	11'111	10'559	10'000
'1	15'976	15'476	14'970	14'458	13'939	13'415	12'883	12'346	11'801	11'250
'0	17'160	16'667	16'168	15'663	15'152	14'634	14'110	13'580	13'043	12'500
6'9	18'343	17'857	17'365	16'867	16'364	15'854	15'337	14'815	14'286	13'750
'8	19'527	19'048	18'563	18'072	17'576	17'073	16'564	16'049	15'528	15'000
'7	20'710	20'238	19'760	19'277	18'788	18'293	17'791	17'284	16'770	16'250
'6	21'893	21'429	20'958	20'482	20'000	19'512	19'018	18'519	18'012	17'500
'5	23'077	22'619	22'156	21'687	21'212	20'732	20'245	19'753	19'255	18'750
'4	24'260	23'810	23'353	22'892	22'424	21'951	21'472	20'988	20'497	20'000
'3	25'444	25'000	24'551	24'096	23'636	23'171	22'699	22'222	21'739	21'250
'2	26'627	26'190	25'749	25'301	24'848	24'390	23'926	23'457	22'981	22'500
'1	27'811	27'381	26'946	26'506	26'061	25'610	25'153	24'691	24'224	23'750
'0	28'994	28'571	28'144	27'711	27'273	26'829	26'380	25'926	25'466	25'000
5'9	30'178	29'762	29'341	28'916	28'485	28'049	27'607	27'160	26'708	26'250
'8	31'361	30'952	30'539	30'120	29'697	29'268	28'834	28'395	27'950	27'500
'7	32'544	32'143	31'737	31'325	30'909	30'488	30'061	29'630	29'193	28'750
'6	33'728	33'333	32'934	32'530	32'121	31'707	31'288	30'864	30'435	30'000
'5	34'911	34'524	34'132	33'735	33'333	32'927	32'515	32'099	31'677	31'250
'4	36'095	35'714	35'329	34'940	34'545	34'146	33'742	33'333	32'919	32'500
'3	37'278	36'905	36'527	36'145	35'758	35'366	34'969	34'568	34'161	33'750
'2	38'462	38'095	37'725	37'349	36'970	36'585	36'196	35'802	35'404	35'000
'1	39'645	39'286	38'922	38'554	38'182	37'805	37'423	37'037	36'646	36'250
'0	40'828	40'476	40'120	39'759	39'394	39'024	38'650	38'272	37'888	37'500
4'9	42'012	41'667	41'317	40'964	40'606	40'244	39'877	39'506	39'130	38'750
'8	43'195	42'857	42'515	42'169	41'818	41'463	41'104	40'741	40'373	40'000
'7	44'379	44'048	43'713	43'373	43'030	42'683	42'331	41'975	41'615	41'250
'6	45'562	45'238	44'910	44'578	44'242	43'902	43'558	43'210	42'857	42'500
'5	46'746	46'429	46'108	45'783	45'455	45'122	44'785	44'444	44'099	43'750
'4	47'929	47'619	47'305	46'988	46'667	46'341	46'012	45'679	45'342	45'000
'3	49'112	48'810	48'503	48'193	47'879	47'561	47'239	46'914	46'584	46'250
'2	50'296	50'000	49'701	49'398	49'091	48'780	48'466	48'148	47'826	47'500
'1	51'479	51'190	50'898	50'602	50'303	50'000	49'693	49'383	49'068	48'750
'0	52'663	52'381	52'096	51'807	51'515	51'220	50'920	50'617	50'311	50'000



$1 + a_x$ 

8	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
3·9	53'846	53'571	53'293	53'012	52'727	52'439	52'147	51'852	51'553	51'250
·8	55'030	54'762	54'491	54'217	53'939	53'659	53'374	53'086	52'795	52'500
·7	56'213	55'952	55'689	55'422	55'152	54'878	54'601	54'321	54'037	53'750
·6	57'396	57'143	56'886	56'626	56'364	56'098	55'828	55'556	55'280	55'000
·5	58'580	58'333	58'084	57'831	57'576	57'317	57'055	56'790	56'522	56'250
·4	59'763	59'524	59'281	59'036	58'788	58'537	58'282	58'025	57'764	57'500
·3	60'947	60'714	60'479	60'241	60'000	59'756	59'509	59'259	59'006	58'750
·2	62'130	61'905	61'677	61'446	61'212	60'976	60'736	60'494	60'248	60'000
·1	63'314	63'095	62'874	62'651	62'424	62'195	61'963	61'728	61'491	61'250
·0	64'497	64'286	64'072	63'855	63'636	63'415	63'190	62'963	62'733	62'500
2·9	65'680	65'476	65'269	65'060	64'848	64'634	64'417	64'198	63'975	63'750
·8	66'864	66'667	66'467	66'265	66'061	65'854	65'644	65'432	65'217	65'000
·7	68'047	67'857	67'665	67'470	67'273	67'073	66'871	66'667	66'460	66'250
·6	69'231	69'048	68'862	68'675	68'485	68'293	68'098	67'901	67'702	67'500
·5	70'414	70'238	70'060	69'880	69'697	69'512	69'325	69'136	68'944	68'750
·4	71'598	71'429	71'257	71'084	70'909	70'732	70'552	70'370	70'186	70'000
·3	72'781	72'619	72'455	72'289	72'121	71'951	71'779	71'605	71'429	71'250
·2	73'965	73'810	73'653	73'494	73'333	73'171	73'006	72'840	72'671	72'500
·1	75'148	75'000	74'850	74'699	74'545	74'390	74'233	74'074	73'913	73'750
·0	76'331	76'190	76'048	75'904	75'758	75'610	75'460	75'309	75'155	75'000
1·9	77'515	77'381	77'246	77'108	76'970	76'829	76'687	76'543	76'398	76'250
·8	78'698	78'571	78'443	78'313	78'182	78'049	77'914	77'778	77'640	77'500
·7	79'882	79'762	79'641	79'518	79'394	79'268	79'141	79'012	78'882	78'750
·6	81'065	80'952	80'838	80'723	80'606	80'488	80'368	80'247	80'124	80'000
·5	82'249	82'143	82'036	81'928	81'818	81'707	81'595	81'481	81'366	81'250
·4	83'432	83'333	83'234	83'133	83'030	82'927	82'822	82'716	82'609	82'500
·3	84'615	84'524	84'431	84'337	84'242	84'146	84'049	83'951	83'851	83'750
·2	85'799	85'714	85'629	85'542	85'455	85'366	85'276	85'185	85'093	85'000
·1	86'982	86'905	86'826	86'747	86'667	86'585	86'503	86'420	86'335	86'250
·0	88'166	88'095	88'024	87'952	87'879	87'805	87'730	87'654	87'578	87'500
·01	·118	·119	·120	·120	·121	·122	·123	·123	·124	·125
·02	·237	·238	·240	·241	·242	·244	·245	·247	·248	·250
·03	·355	·357	·359	·361	·361	·366	·368	·370	·373	·375
·04	·473	·476	·479	·482	·485	·488	·491	·494	·497	·500
·05	·592	·595	·599	·602	·606	·610	·613	·617	·621	·625
·06	·710	·714	·719	·723	·727	·732	·736	·741	·745	·750
·07	·828	·833	·838	·843	·848	·854	·859	·864	·870	·875
·08	·947	·952	·958	·964	·970	·976	·982	·988	·994	1·000
·09	1·065	1·071	1·078	1·084	1·091	1·098	1·104	1·111	1·118	1·125



$1 + a_x$ 

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
7'9	·629	·000	·000	·000	·000	·000	·000	·000	·000	·000
·8	1·887	1·266	·637	·000	·000	·000	·000	·000	·000	·000
·7	3·145	2·532	1·911	1·282	·645	·000	·000	·000	·000	·000
·6	4·403	3·797	3·185	2·564	1·935	1·299	·654	·000	·000	·000
·5	5·660	5·063	4·459	3·846	3·226	2·597	1·961	1·316	·662	·000
·4	6·918	6·329	5·732	5·128	4·516	3·896	3·268	2·632	1·987	1·333
·3	8·176	7·595	7·006	6·410	5·806	5·195	4·575	3·947	3·311	2·667
·2	9·434	8·861	8·280	7·692	7·097	6·494	5·882	5·263	4·636	4·000
·1	10·692	10·127	9·554	8·974	8·387	7·792	7·190	6·579	5·960	5·333
·0	11·950	11·392	10·828	10·256	9·677	9·091	8·497	7·895	7·285	6·667
6'9	13·208	12·658	12·102	11·538	10·968	10·390	9·804	9·211	8·609	8·000
·8	14·465	13·924	13·376	12·821	12·258	11·688	11·111	10·526	9·934	9·333
·7	15·723	15·190	14·650	14·103	13·548	12·987	12·418	11·842	11·258	10·667
·6	16·981	16·456	15·924	15·385	14·839	14·286	13·725	13·158	12·583	12·000
·5	18·239	17·722	17·197	16·667	16·129	15·584	15·033	14·474	13·907	13·333
·4	19·497	18·987	18·471	17·949	17·419	16·883	16·340	15·789	15·232	14·667
·3	20·755	20·253	19·745	19·231	18·710	18·182	17·647	17·105	16·556	16·000
·2	22·013	21·519	21·019	20·513	20·000	19·481	18·954	18·421	17·881	17·333
·1	23·270	22·785	22·293	21·795	21·290	20·779	20·261	19·737	19·205	18·667
·0	24·528	24·051	23·567	23·077	22·581	22·078	21·569	21·053	20·530	20·000
5'9	25·786	25·316	24·841	24·359	23·871	23·377	22·876	22·368	21·854	21·333
·8	27·044	26·582	26·115	25·641	25·161	24·675	24·183	23·684	23·179	22·667
·7	28·302	27·848	27·389	26·923	26·452	25·974	25·490	25·000	24·503	24·000
·6	29·560	29·114	28·662	28·205	27·742	27·273	26·797	26·316	25·828	25·333
·5	30·818	30·380	29·936	29·487	29·032	28·571	28·105	27·632	27·152	26·667
·4	32·075	31·646	31·210	30·769	30·323	29·870	29·412	28·947	28·477	28·000
·3	33·333	32·911	32·484	32·051	31·613	31·169	30·719	30·263	29·801	29·333
·2	34·591	34·177	33·758	33·333	32·903	32·468	32·026	31·579	31·126	30·667
·1	35·849	35·443	35·032	34·615	34·194	33·766	33·333	32·895	32·450	32·000
·0	37·107	36·709	36·306	35·897	35·484	35·065	34·641	34·211	33·775	33·333
4'9	38·365	37·975	37·580	37·179	36·774	36·364	35·948	35·526	35·099	34·667
·8	39·623	39·241	38·853	38·462	38·065	37·662	37·255	36·842	36·424	36·000
·7	40·881	40·506	40·127	39·744	39·355	38·961	38·562	38·158	37·748	37·333
·6	42·138	41·772	41·401	41·026	40·645	40·260	39·869	39·474	39·073	38·667
·5	43·396	43·038	42·675	42·308	41·935	41·558	41·176	40·789	40·397	40·000
·4	44·654	44·304	43·949	43·590	43·226	42·857	42·484	42·105	41·722	41·333
·3	45·912	45·570	45·223	44·872	44·516	44·156	43·791	43·421	43·046	42·667
·2	47·170	46·835	46·497	46·154	45·806	45·455	45·098	44·737	44·371	44·000
·1	48·428	48·101	47·771	47·436	47·097	46·753	46·405	46·053	45·695	45·333
·0	49·686	49·367	49·045	48·718	48·387	48·052	47·712	47·368	47·020	46·667
3'9	50·943	50·633	50·318	50·000	49·677	49·351	49·020	48·684	48·344	48·000
·8	52·201	51·899	51·592	51·282	50·968	50·649	50·327	50·000	49·669	49·333
·7	53·459	53·165	52·866	52·564	52·258	51·948	51·634	51·316	50·993	50·667
·6	54·717	54·430	54·140	53·846	53·548	53·247	52·941	52·632	52·318	52·000
·5	55·975	55·696	55·414	55·128	54·839	54·545	54·248	53·947	53·642	53·333
·4	57·233	56·962	56·688	56·410	56·129	55·844	55·556	55·263	54·967	54·667
·3	58·491	58·228	57·962	57·692	57·419	57·143	56·863	56·579	56·291	56·000
·2	59·748	59·494	59·236	58·974	58·710	58·442	58·170	57·895	57·616	57·333
·1	61·006	60·760	60·510	60·256	60·000	59·740	59·477	59·211	58·940	58·667
·0	62·264	62·025	61·783	61·538	61·290	61·039	60·784	60·526	60·265	60·000

$1+a_x$

	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1+a_{x+n}$										
2'9	63'522	63'291	63'057	62'820	62'581	62'338	62'092	61'842	61'589	61'333
'8	64'780	64'557	64'331	64'103	63'871	63'636	63'399	63'158	62'914	62'667
'7	66'038	65'823	65'605	65'385	65'161	64'935	64'706	64'474	64'238	64'000
'6	67'296	67'089	66'879	66'667	66'452	66'234	66'013	65'789	65'563	65'333
'5	68'553	68'354	68'153	67'949	67'742	67'532	67'320	67'105	66'887	66'667
'4	69'811	69'620	69'427	69'231	69'032	68'831	68'627	68'421	68'212	68'000
'3	71'069	70'886	70'701	70'513	70'323	70'130	69'935	69'737	69'536	69'333
'2	72'327	72'152	71'975	71'795	71'613	71'429	71'242	71'053	70'861	70'667
'1	73'585	73'418	73'248	73'077	72'903	72'727	72'549	72'368	72'185	72'000
'0	74'843	74'684	74'522	74'359	74'194	74'026	73'856	73'684	73'510	73'333
1'9	76'101	75'949	75'796	75'641	75'484	75'325	75'163	75'000	74'834	74'667
'8	77'359	77'215	77'070	76'923	76'774	76'623	76'471	76'316	76'159	76'000
'7	78'616	78'481	78'344	78'205	78'065	77'922	77'778	77'632	77'483	77'333
'6	79'874	79'747	79'618	79'487	79'355	79'221	79'085	78'947	78'808	78'667
'5	81'132	81'013	80'892	80'769	80'645	80'519	80'392	80'263	80'132	80'000
'4	82'390	82'278	82'166	82'051	81'936	81'818	81'699	81'579	81'457	81'333
'3	83'648	83'544	83'439	83'333	83'226	83'117	83'007	82'895	82'781	82'667
'2	84'906	84'810	84'713	84'615	84'516	84'416	84'314	84'210	84'106	84'000
'1	86'164	86'076	85'987	85'897	85'806	85'714	85'621	85'526	85'430	85'333
'0	87'421	87'342	87'261	87'179	87'097	87'013	86'928	86'842	86'755	86'667
'01	·126	·127	·127	·128	·129	·130	·131	·132	·132	·133
'02	·252	·253	·255	·256	·258	·260	·261	·263	·265	·267
'03	·377	·380	·382	·385	·387	·390	·392	·395	·397	·400
'04	·503	·506	·510	·513	·516	·519	·523	·526	·530	·533
'05	·629	·633	·637	·641	·645	·649	·654	·658	·662	·667
'06	·755	·759	·764	·769	·774	·779	·784	·789	·795	·800
'07	·881	·886	·892	·897	·903	·909	·915	·921	·927	·933
'08	1'006	1'013	1'019	1'026	1'032	1'039	1'046	1'053	1'060	1'067
'09	1'132	1'139	1'146	1'154	1'161	1'169	1'176	1'184	1'192	1'200
7	·45	·40	·35	·30	·25	·20	·15	·10	·05	·00
7'4	·671	·000	·000	·000	·000	·000	·000	·000	·000	·000
'3	2'013	1'351	·680	·000	·000	·000	·000	·000	·000	·000
'2	3'356	2'703	2'041	1'370	·690	·000	·000	·000	·000	·000
'1	4'698	4'054	3'401	2'740	2'069	1'389	·699	·000	·000	·000
'0	6'040	5'405	4'762	4'110	3'448	2'778	2'098	1'408	·709	·000
'01	·134	·135	·136	·137	·138	·139	·140	·141	·142	·143
'02	·268	·270	·272	·274	·276	·278	·280	·282	·284	·286
'03	·403	·405	·408	·411	·414	·417	·420	·423	·426	·429
'04	·537	·541	·544	·548	·552	·556	·559	·563	·567	·571
'05	·671	·676	·680	·685	·690	·694	·699	·704	·709	·714
'06	·805	·811	·816	·822	·828	·833	·839	·845	·851	·857
'07	·940	·946	·952	·959	·966	·972	·979	·986	·993	1'000
'08	1'074	1'081	1'088	1'096	1'103	1'111	1'119	1'127	1'135	1'143
'09	1'208	1'216	1'224	1'233	1'241	1'250	1'259	1'268	1'277	1'286

$1 + a_x$ 

	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
6'9	7'383	6'757	6'122	5'479	4'828	4'167	3'497	2'817	2'128	1'429
'8	8'725	8'108	7'483	6'849	6'207	5'556	4'895	4'225	3'546	2'857
'7	10'067	9'459	8'844	8'219	7'586	6'944	6'294	5'634	4'965	4'286
'6	11'409	10'811	10'204	9'589	8'966	8'333	7'692	7'042	6'383	5'714
'5	12'752	12'162	11'565	10'959	10'345	9'722	9'091	8'451	7'801	7'143
'4	14'094	13'514	12'925	12'329	11'724	11'111	10'490	9'859	9'220	8'571
'3	15'436	14'865	14'286	13'699	13'103	12'500	11'888	11'268	10'638	10'000
'2	16'779	16'216	15'646	15'068	14'483	13'889	13'287	12'676	12'057	11'429
'1	18'121	17'568	17'007	16'438	15'862	15'278	14'685	14'085	13'475	12'857
'0	19'463	18'919	18'367	17'808	17'241	16'667	16'084	15'493	14'894	14'286
5'9	20'805	20'270	19'728	19'178	18'621	18'056	17'483	16'901	16'312	15'714
'8	22'148	21'622	21'088	20'548	20'000	19'444	18'881	18'310	17'731	17'143
'7	23'490	22'973	22'449	21'918	21'379	20'833	20'280	19'718	19'149	18'571
'6	24'832	24'324	23'810	23'288	22'759	22'222	21'678	21'127	20'567	20'000
'5	26'174	25'676	25'170	24'658	24'138	23'611	23'077	22'535	21'986	21'429
'4	27'517	27'027	26'531	26'027	25'517	25'000	24'476	23'944	23'404	22'857
'3	28'859	28'378	27'891	27'397	26'897	26'389	25'874	25'352	24'823	24'286
'2	30'201	29'730	29'252	28'767	28'276	27'778	27'273	26'761	26'241	25'714
'1	31'544	31'081	30'612	30'137	29'655	29'167	28'671	28'169	27'660	27'143
'0	32'886	32'432	31'973	31'507	31'034	30'556	30'070	29'577	29'078	28'571
4'9	34'228	33'784	33'333	32'877	32'414	31'944	31'469	30'986	30'496	30'000
'8	35'570	35'135	34'694	34'247	33'793	33'333	32'867	32'394	31'915	31'429
'7	36'913	36'486	36'054	35'616	35'172	34'722	34'266	33'803	33'333	32'857
'6	38'255	37'838	37'415	36'986	36'552	36'111	35'664	35'211	34'752	34'286
'5	39'597	39'189	38'776	38'356	37'931	37'500	37'063	36'620	36'170	35'714
'4	40'940	40'541	40'136	39'726	39'310	38'889	38'462	38'028	37'589	37'143
'3	42'282	41'892	41'497	41'096	40'690	40'278	39'860	39'437	39'007	38'571
'2	43'624	43'243	42'857	42'466	42'069	41'667	41'259	40'845	40'426	40'000
'1	44'966	44'595	44'218	43'836	43'448	43'056	42'657	42'254	41'844	41'429
'0	46'309	45'946	45'578	45'205	44'828	44'444	44'056	43'662	43'262	42'857
3'9	47'651	47'297	46'939	46'575	46'207	45'833	45'455	45'070	44'681	44'286
'8	48'993	48'649	48'299	47'945	47'586	47'222	46'853	46'479	46'099	45'714
'7	50'336	50'000	49'660	49'315	48'966	48'611	48'252	47'887	47'518	47'143
'6	51'678	51'351	51'020	50'685	50'345	50'000	49'650	49'296	48'936	48'571
'5	53'020	52'703	52'381	52'055	51'724	51'389	51'049	50'704	50'355	50'000
'4	54'362	54'054	53'741	53'425	53'103	52'778	52'448	52'113	51'773	51'429
'3	55'705	55'405	55'102	54'795	54'483	54'167	53'846	53'521	53'192	52'857
'2	57'047	56'757	56'463	56'164	55'862	55'556	55'245	54'930	54'610	54'286
'1	58'389	58'108	57'823	57'534	57'241	56'944	56'643	56'338	56'028	55'714
'0	59'732	59'459	59'184	58'904	58'621	58'333	58'042	57'746	57'447	57'143
2'9	61'074	60'811	60'544	60'274	60'000	59'722	59'441	59'155	58'865	58'571
'8	62'416	62'162	61'905	61'644	61'379	61'111	60'839	60'563	60'284	60'000
'7	63'758	63'513	63'265	63'014	62'759	62'500	62'238	61'972	61'702	61'429
'6	65'101	64'865	64'626	64'384	64'138	63'889	63'636	63'380	63'121	62'857
'5	66'443	66'216	65'986	65'753	65'517	65'278	65'035	64'789	64'539	64'286



$1 + a_x$ 

7	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
2'4	67'785	67'568	67'347	67'123	66'897	66'667	66'434	66'197	65'957	65'714
'3	69'128	68'919	68'707	68'493	68'276	68'056	67'832	67'606	67'376	67'143
'2	70'470	70'270	70'068	69'863	69'655	69'444	69'231	69'014	68'794	68'571
'1	71'812	71'622	71'429	71'233	71'034	70'833	70'629	70'423	70'213	70'000
'0	73'154	72'973	72'789	72'603	72'414	72'222	72'028	71'831	71'631	71'429
1'9	74'497	74'324	74'150	73'973	73'793	73'611	73'427	73'239	73'050	72'857
'8	75'839	75'676	75'510	75'342	75'172	75'000	74'825	74'648	74'468	74'286
'7	77'181	77'027	76'871	76'712	76'552	76'389	76'224	76'056	75'887	75'714
'6	78'523	78'378	78'231	78'082	77'931	77'778	77'622	77'465	77'305	77'143
'5	79'866	79'730	79'592	79'452	79'310	79'167	79'021	78'873	78'723	78'571
'4	81'208	81'081	80'952	80'822	80'690	80'556	80'420	80'282	80'142	80'000
'3	82'550	82'432	82'313	82'192	82'069	81'944	81'818	81'690	81'560	81'429
'2	83'893	83'784	83'673	83'562	83'448	83'333	83'217	83'099	82'979	82'857
'1	85'235	85'135	85'034	84'932	84'828	84'722	84'615	84'507	84'397	84'286
'0	86'577	86'486	86'395	86'301	86'207	86'111	86'014	85'916	85'816	85'714
'01	'134	'135	'136	'137	'138	'139	'140	'141	'142	'143
'02	'268	'270	'272	'274	'276	'278	'280	'282	'284	'286
'03	'403	'405	'408	'411	'414	'417	'420	'423	'426	'429
'04	'537	'541	'544	'548	'552	'556	'559	'563	'567	'571
'05	'671	'676	'680	'685	'690	'694	'699	'704	'709	'714
'06	'805	'811	'816	'822	'828	'833	'839	'845	'851	'857
'07	'940	'946	'952	'959	'966	'972	'979	'986	'993	1'000
'08	1'074	1'081	1'088	1'096	1'103	1'111	1'119	1'127	1'135	1'143
'09	1'208	1'216	1'224	1'233	1'241	1'250	1'259	1'268	1'277	1'286

6	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
6'9	'719	'000	'000	'000	'000	'000	'000	'000	'000	'000
'8	2'158	1'449	'730	'000	'000	'000	'000	'000	'000	'000
'7	3'597	2'899	2'190	1'471	'741	'000	'000	'000	'000	'000
'6	5'036	4'348	3'650	2'941	2'222	1'493	'752	'000	'000	'000
'5	6'475	5'797	5'109	4'412	3'704	2'985	2'256	1'515	'763	'000
'01	'144	'145	'146	'147	'148	'149	'150	'152	'153	'154
'02	'288	'290	'292	'294	'296	'299	'301	'303	'305	'308
'03	'432	'435	'438	'441	'444	'448	'451	'455	'458	'462
'04	'576	'580	'584	'588	'593	'597	'602	'606	'611	'615
'05	'719	'725	'730	'735	'741	'746	'752	'758	'763	'769
'06	'863	'870	'876	'882	'889	'896	'902	'909	'916	'923
'07	1'007	1'014	1'022	1'029	1'037	1'045	1'053	1'061	1'069	1'077
'08	1'151	1'159	1'168	1'176	1'185	1'191	1'203	1'212	1'221	1'231
'09	1'295	1'304	1'314	1'324	1'333	1'343	1'353	1'364	1'374	1'385



$1 + a_x$ 

6	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
6.4	7'914	7'246	6'569	5'882	5'185	4'478	3'759	3'030	2'290	1'538
3	9'353	8'696	8'029	7'353	6'667	5'970	5'263	4'545	3'817	3'077
2	10'791	10'145	9'489	8'824	8'148	7'463	6'767	6'061	5'344	4'615
1	12'230	11'594	10'949	10'294	9'630	8'955	8'271	7'576	6'870	6'154
0	13'669	13'043	12'409	11'765	11'111	10'448	9'774	9'091	8'397	7'692
5.9	15'108	14'493	13'869	13'235	12'593	11'940	11'278	10'606	9'924	9'231
8	16'547	15'942	15'328	14'706	14'074	13'433	12'782	12'121	11'450	10'769
7	17'986	17'391	16'788	16'176	15'556	14'925	14'286	13'636	12'977	12'308
6	19'424	18'841	18'248	17'647	17'037	16'418	15'789	15'152	14'504	13'846
5	20'863	20'290	19'708	19'118	18'519	17'910	17'293	16'667	16'031	15'385
4	22'302	21'739	21'168	20'588	20'000	19'403	18'797	18'182	17'557	16'923
3	23'741	23'188	22'628	22'059	21'481	20'896	20'301	19'697	19'084	18'462
2	25'180	24'638	24'088	23'529	22'963	22'388	21'805	21'212	20'611	20'000
1	26'619	26'087	25'547	25'000	24'444	23'881	23'308	22'727	22'137	21'538
0	28'058	27'536	27'007	26'471	25'926	25'373	24'812	24'242	23'664	23'077
4.9	29'496	28'986	28'467	27'941	27'407	26'866	26'316	25'758	25'191	24'615
8	30'935	30'435	29'927	29'412	28'889	28'358	27'820	27'273	26'718	26'154
7	32'374	31'884	31'387	30'882	30'370	29'851	29'323	28'788	28'244	27'692
6	33'813	33'333	32'847	32'353	31'852	31'343	30'827	30'303	29'771	29'231
5	35'252	34'783	34'307	33'824	33'333	32'836	32'331	31'818	31'298	30'769
4	36'691	36'232	35'766	35'294	34'815	34'328	33'835	33'333	32'824	32'308
3	38'129	37'681	37'226	36'765	36'296	35'821	35'338	34'848	34'351	33'846
2	39'568	39'130	38'686	38'235	37'778	37'313	36'842	36'364	35'878	35'385
1	41'007	40'580	40'146	39'706	39'259	38'806	38'346	37'879	37'405	36'923
0	42'446	42'029	41'606	41'176	40'741	40'298	39'850	39'394	38'931	38'462
3.9	43'885	43'478	43'066	42'647	42'222	41'791	41'353	40'909	40'458	40'000
8	45'324	44'928	44'526	44'118	43'704	43'284	42'857	42'424	41'985	41'538
7	46'763	46'377	45'985	45'588	45'185	44'776	44'361	43'939	43'511	43'077
6	48'201	47'826	47'445	47'059	46'667	46'269	45'865	45'455	45'038	44'615
5	49'640	49'275	48'905	48'529	48'148	47'761	47'368	46'970	46'565	46'154
4	51'079	50'725	50'365	50'000	49'630	49'254	48'872	48'485	48'092	47'692
3	52'518	52'174	51'825	51'471	51'111	50'746	50'376	50'000	49'618	49'231
2	53'957	53'623	53'285	52'941	52'593	52'239	51'880	51'515	51'145	50'769
1	55'396	55'072	54'745	54'412	54'074	53'731	53'383	53'030	52'672	52'308
0	56'835	56'522	56'204	55'882	55'556	55'224	54'887	54'545	54'198	53'846
2.9	58'273	57'971	57'664	57'353	57'037	56'716	56'391	56'061	55'725	55'385
8	59'712	59'420	59'124	58'824	58'518	58'209	57'895	57'576	57'252	56'923
7	61'151	60'870	60'584	60'294	60'000	59'701	59'398	59'091	58'779	58'462
6	62'590	62'319	62'044	61'765	61'481	61'194	60'902	60'606	60'305	60'000
5	64'029	63'768	63'504	63'235	62'963	62'687	62'406	62'121	61'832	61'538
4	65'468	65'217	64'964	64'706	64'444	64'179	63'910	63'636	63'359	63'077
3	66'906	66'667	66'423	66'176	65'926	65'672	65'414	65'152	64'886	64'615
2	68'345	68'116	67'883	67'647	67'407	67'164	66'917	66'667	66'412	66'154
1	69'784	69'565	69'343	69'118	68'889	68'657	68'421	68'182	67'939	67'692
0	71'223	71'014	70'803	70'588	70'370	70'149	69'925	69'697	69'466	69'231
1.9	72'662	72'464	72'263	72'059	71'852	71'642	71'429	71'212	70'992	70'769
8	74'101	73'913	73'723	73'529	73'333	73'134	72'932	72'727	72'519	72'308
7	75'540	75'362	75'182	75'000	74'815	74'627	74'436	74'242	74'046	73'846
6	76'978	76'812	76'642	76'471	76'296	76'119	75'940	75'758	75'573	75'385
5	78'417	78'261	78'102	77'941	77'778	77'612	77'444	77'273	77'099	76'923

$1 + a_x$ 

6	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
1.4	79.856	79.710	79.562	79.412	79.259	79.104	78.947	78.788	78.626	78.462
3	81.295	81.159	81.022	80.882	80.741	80.597	80.451	80.303	80.153	80.000
2	82.734	82.609	82.482	82.353	82.222	82.090	81.955	81.818	81.679	81.538
1	84.173	84.058	83.942	83.824	83.704	83.582	83.459	83.333	83.206	83.077
0	85.612	85.507	85.401	85.294	85.185	85.075	84.962	84.849	84.733	84.615
0.1	.144	.145	.146	.147	.148	.149	.150	.152	.153	.154
0.2	.288	.290	.292	.294	.296	.299	.301	.303	.305	.308
0.3	.432	.435	.438	.441	.444	.448	.451	.455	.458	.462
0.4	.576	.580	.584	.588	.593	.597	.602	.606	.611	.615
0.5	.719	.725	.730	.735	.741	.746	.752	.758	.763	.769
0.6	.863	.870	.876	.882	.889	.896	.902	.909	.916	.923
0.7	1.007	1.014	1.022	1.029	1.037	1.045	1.053	1.061	1.069	1.077
0.8	1.151	1.159	1.168	1.176	1.185	1.194	1.203	1.212	1.221	1.231
0.9	1.295	1.304	1.314	1.324	1.333	1.343	1.353	1.364	1.374	1.385

6	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
6.4	.775	.000	.000	.000	.000	.000	.000	.000	.000	.000
3	2.326	1.563	.787	.000	.000	.000	.000	.000	.000	.000
2	3.876	3.125	2.362	1.587	.800	.000	.000	.000	.000	.000
1	5.426	4.688	3.937	3.175	2.400	1.613	.813	.000	.000	.000
0	6.977	6.250	5.512	4.762	4.000	3.226	2.439	1.639	.826	.000
5.9	8.527	7.813	7.087	6.349	5.600	4.839	4.065	3.279	2.479	1.667
8	10.078	9.375	8.661	7.937	7.200	6.452	5.691	4.918	4.132	3.333
7	11.628	10.938	10.236	9.524	8.800	8.065	7.317	6.557	5.785	5.000
6	13.178	12.500	11.811	11.111	10.400	9.677	8.943	8.197	7.438	6.667
5	14.729	14.063	13.386	12.698	12.000	11.290	10.569	9.836	9.091	8.333
4	16.279	15.625	14.961	14.286	13.600	12.903	12.195	11.475	10.744	10.000
3	17.829	17.188	16.535	15.873	15.200	14.516	13.821	13.115	12.397	11.667
2	19.380	18.750	18.110	17.460	16.800	16.129	15.447	14.754	14.050	13.333
1	20.930	20.313	19.685	19.048	18.400	17.742	17.073	16.393	15.702	15.000
0	22.481	21.875	21.260	20.635	20.000	19.355	18.699	18.033	17.355	16.667
4.9	24.031	23.438	22.835	22.222	21.600	20.968	20.325	19.672	19.008	18.333
8	25.581	25.000	24.409	23.810	23.200	22.581	21.951	21.311	20.661	20.000
7	27.132	26.563	25.984	25.397	24.800	24.194	23.577	22.951	22.314	21.667
6	28.682	28.125	27.559	26.984	26.400	25.806	25.203	24.590	23.967	23.333
5	30.233	29.688	29.134	28.571	28.000	27.419	26.829	26.230	25.620	25.000
0.1	.155	.156	.157	.159	.160	.161	.163	.164	.165	.167
0.2	.310	.313	.315	.317	.320	.323	.325	.328	.331	.333
0.3	.465	.469	.472	.476	.480	.484	.488	.492	.496	.500
0.4	.620	.625	.630	.635	.640	.645	.650	.656	.661	.667
0.5	.775	.781	.787	.794	.800	.806	.813	.820	.826	.833
0.6	.930	.938	.945	.952	.960	.968	.976	.984	.992	1.000
0.7	1.085	1.094	1.102	1.111	1.120	1.129	1.138	1.148	1.157	1.167
0.8	1.240	1.250	1.260	1.270	1.280	1.290	1.301	1.311	1.322	1.333
0.9	1.395	1.406	1.417	1.429	1.440	1.452	1.463	1.475	1.488	1.500

$1 + a_x$ 

6	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+1}$										
4.4	31.783	31.250	30.709	30.159	29.600	29.032	28.455	27.869	27.273	26.667
3	33.333	32.813	32.283	31.746	31.200	30.645	30.081	29.508	28.926	28.333
2	34.884	34.375	33.858	33.333	32.800	32.258	31.707	31.148	30.579	30.000
1	36.434	35.938	35.433	34.921	34.400	33.871	33.333	32.787	32.231	31.667
0	37.985	37.500	37.008	36.508	36.000	35.484	34.959	34.426	33.884	33.333
3.9	39.535	39.063	38.583	38.095	37.600	37.097	36.585	36.066	35.537	35.000
8	41.085	40.625	40.157	39.683	39.200	38.710	38.211	37.705	37.190	36.667
7	42.636	42.188	41.732	41.270	40.800	40.323	39.837	39.344	38.843	38.333
6	44.186	43.750	43.307	42.857	42.400	41.935	41.463	40.984	40.496	40.000
5	45.736	45.313	44.882	44.444	44.000	43.548	43.089	42.623	42.149	41.667
4	47.287	46.875	46.457	46.032	45.600	45.161	44.715	44.262	43.802	43.333
3	48.837	48.438	48.031	47.619	47.200	46.774	46.341	45.902	45.455	45.000
2	50.388	50.000	49.606	49.206	48.800	48.387	47.967	47.541	47.107	46.667
1	51.938	51.563	51.181	50.794	50.400	50.000	49.593	49.180	48.760	48.333
0	53.488	53.125	52.756	52.381	52.000	51.613	51.220	50.820	50.413	50.000
2.9	55.039	54.688	54.331	53.968	53.600	53.226	52.846	52.459	52.066	51.667
8	56.589	56.250	55.906	55.556	55.200	54.839	54.472	54.098	53.719	53.333
7	58.140	57.813	57.480	57.143	56.800	56.452	56.098	55.738	55.372	55.000
6	59.690	59.375	59.055	58.730	58.400	58.065	57.724	57.377	57.025	56.667
5	61.240	60.938	60.630	60.317	60.000	59.677	59.350	59.016	58.678	58.333
4	62.791	62.500	62.205	61.905	61.600	61.290	60.976	60.656	60.331	60.000
3	64.341	64.063	63.780	63.492	63.200	62.903	62.602	62.295	61.983	61.667
2	65.891	65.625	65.354	65.079	64.800	64.510	64.228	63.934	63.636	63.333
1	67.442	67.188	66.929	66.667	66.400	66.129	65.854	65.574	65.289	65.000
0	68.992	68.750	68.504	68.254	68.000	67.742	67.480	67.213	66.942	66.667
1.9	70.543	70.313	70.079	69.841	69.600	69.355	69.106	68.852	68.595	68.333
8	72.093	71.875	71.654	71.429	71.200	70.968	70.732	70.492	70.248	70.000
7	73.643	73.438	73.228	73.016	72.800	72.581	72.358	72.131	71.901	71.667
6	75.194	75.000	74.803	74.603	74.400	74.194	73.984	73.770	73.554	73.333
5	76.744	76.563	76.378	76.190	76.000	75.806	75.610	75.410	75.207	75.000
4	78.295	78.125	77.953	77.778	77.600	77.419	77.236	77.049	76.860	76.667
3	79.845	79.688	79.528	79.365	79.200	79.032	78.862	78.689	78.512	78.333
2	81.395	81.250	81.102	80.952	80.800	80.645	80.488	80.328	80.165	80.000
1	82.946	82.813	82.677	82.540	82.400	82.258	82.114	81.967	81.818	81.667
0	84.496	84.375	84.252	84.127	84.000	83.871	83.740	83.607	83.471	83.333
0.1	.155	.156	.157	.159	.160	.161	.163	.164	.165	.167
0.2	.310	.313	.315	.317	.320	.323	.325	.328	.331	.333
0.3	.465	.469	.472	.476	.480	.484	.488	.492	.496	.500
0.4	.620	.625	.630	.635	.640	.645	.650	.656	.661	.667
0.5	.775	.781	.787	.791	.800	.806	.813	.820	.826	.833
0.6	.930	.938	.945	.952	.960	.968	.976	.984	.992	1.000
0.7	1.085	1.091	1.102	1.111	1.120	1.129	1.138	1.148	1.157	1.167
0.8	1.240	1.250	1.260	1.270	1.280	1.290	1.301	1.311	1.322	1.333
0.9	1.395	1.406	1.417	1.429	1.440	1.452	1.463	1.475	1.488	1.500



$1 + a_x$ 

5	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$1 + a_{x+n}$										
5'9	·840	·000	·000	·000	·000	·000	·000	·000	·000	·000
·8	2'521	1'695	·855	·000	·000	·000	·000	·000	·000	·000
·7	4'202	3'390	2'564	1'724	·870	·000	·000	·000	·000	·000
·6	5'882	5'085	4'274	3'448	2'609	1'754	·885	·000	·000	·000
·5	7'563	6'780	5'983	5'172	4'348	3'509	2'655	1'786	·901	·000
·4	9'244	8'475	7'692	6'897	6'087	5'263	4'425	3'571	2'703	1'818
·3	10'924	10'169	9'402	8'621	7'826	7'018	6'195	5'357	4'505	3'636
·2	12'605	11'864	11'111	10'345	9'565	8'772	7'965	7'143	6'306	5'455
·1	14'286	13'559	12'821	12'069	11'304	10'526	9'735	8'929	8'108	7'273
·0	15'966	15'254	14'530	13'793	13'043	12'281	11'504	10'714	9'910	9'091
4'9	17'647	16'949	16'239	15'517	14'783	14'035	13'274	12'500	11'712	10'909
·8	19'328	18'644	17'949	17'241	16'522	15'789	15'044	14'286	13'514	12'727
·7	21'008	20'339	19'658	18'966	18'261	17'544	16'814	16'071	15'315	14'545
·6	22'689	22'034	21'368	20'690	20'000	19'298	18'584	17'857	17'117	16'364
·5	24'370	23'729	23'077	22'414	21'739	21'053	20'354	19'643	18'919	18'182
·4	26'050	25'424	24'786	24'138	23'478	22'807	22'124	21'429	20'721	20'000
·3	27'731	27'119	26'496	25'862	25'217	24'561	23'894	23'214	22'523	21'818
·2	29'412	28'814	28'205	27'586	26'957	26'316	25'664	25'000	24'324	23'636
·1	31'092	30'508	29'915	29'310	28'696	28'070	27'434	26'786	26'126	25'455
·0	32'773	32'203	31'624	31'034	30'435	29'825	29'204	28'571	27'928	27'273
3'9	34'454	33'898	33'333	32'759	32'174	31'579	30'973	30'357	29'730	29'091
·8	36'134	35'593	35'043	34'483	33'913	33'333	32'743	32'143	31'532	30'909
·7	37'815	37'288	36'752	36'207	35'652	35'088	34'513	33'929	33'333	32'727
·6	39'496	38'983	38'462	37'931	37'391	36'842	36'283	35'714	35'135	34'545
·5	41'176	40'678	40'171	39'655	39'130	38'596	38'053	37'500	36'937	36'364
·4	42'857	42'373	41'880	41'379	40'870	40'351	39'823	39'286	38'739	38'182
·3	44'538	44'068	43'590	43'103	42'609	42'105	41'593	41'071	40'541	40'000
·2	46'218	45'763	45'299	44'828	44'348	43'860	43'363	42'857	42'342	41'818
·1	47'899	47'458	47'009	46'552	46'087	45'614	45'133	44'643	44'144	43'636
·0	49'580	49'153	48'718	48'276	47'826	47'368	46'903	46'429	45'946	45'455
2'9	51'260	50'847	50'427	50'000	49'565	49'123	48'673	48'214	47'748	47'273
·8	52'941	52'542	52'137	51'724	51'304	50'877	50'442	50'000	49'550	49'091
·7	54'622	54'237	53'846	53'448	53'043	52'632	52'212	51'786	51'351	50'909
·6	56'303	55'932	55'556	55'172	54'783	54'386	53'982	53'571	53'153	52'727
·5	57'983	57'627	57'265	56'897	56'522	56'140	55'752	55'357	54'955	54'545
·01	·168	·169	·171	·172	·174	·175	·177	·179	·180	·182
·02	·336	·339	·342	·345	·348	·351	·354	·357	·360	·364
·03	·501	·508	·513	·517	·522	·526	·531	·536	·541	·545
·04	·672	·678	·681	·690	·696	·702	·708	·714	·721	·727
·05	·840	·847	·855	·862	·870	·877	·885	·893	·901	·909
·06	1'008	1'017	1'026	1'034	1'043	1'053	1'062	1'071	1'081	1'091
·07	1'176	1'186	1'197	1'207	1'217	1'228	1'239	1'250	1'261	1'273
·08	1'345	1'356	1'368	1'379	1'391	1'404	1'416	1'429	1'441	1'455
·09	1'513	1'525	1'538	1'552	1'565	1'579	1'593	1'607	1'622	1'636



1 + a <sub>x</sub>										
5	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
<i>1 + a<sub>x+n</sub></i>										
2.4	59.664	59.322	58.974	58.621	58.261	57.895	57.522	57.143	56.757	56.364
'3	61.345	61.017	60.684	60.345	60.000	59.649	59.292	58.929	58.559	58.182
'2	63.025	62.712	62.393	62.069	61.739	61.404	61.062	60.714	60.360	60.000
'1	64.706	64.407	64.103	63.793	63.478	63.158	62.832	62.500	62.162	61.818
'0	66.387	66.102	65.812	65.517	65.217	64.912	64.602	64.286	63.964	63.636
1.9	68.067	67.797	67.521	67.241	66.957	66.667	66.372	66.071	65.766	65.455
'8	69.748	69.492	69.231	68.966	68.696	68.421	68.142	67.857	67.568	67.273
'7	71.429	71.186	70.940	70.690	70.435	70.175	69.912	69.643	69.369	69.091
'6	73.109	72.881	72.650	72.414	72.174	71.930	71.681	71.429	71.171	70.909
'5	74.790	74.576	74.359	74.138	73.913	73.684	73.451	73.214	72.973	72.727
'4	76.471	76.271	76.068	75.862	75.652	75.439	75.221	75.000	74.775	74.545
'3	78.151	77.966	77.778	77.586	77.391	77.193	76.991	76.786	76.577	76.364
'2	79.832	79.661	79.487	79.310	79.130	78.947	78.761	78.571	78.378	78.182
'1	81.513	81.356	81.197	81.034	80.870	80.702	80.531	80.357	80.180	80.000
'0	83.193	83.051	82.906	82.759	82.609	82.456	82.301	82.143	81.982	81.818
.01	.168	.169	.171	.172	.174	.175	.177	.179	.180	.182
.02	.336	.339	.342	.345	.348	.351	.354	.357	.360	.364
.03	.504	.508	.513	.517	.522	.526	.531	.536	.541	.545
.04	.672	.678	.684	.690	.696	.702	.708	.714	.721	.727
.05	.840	.847	.855	.862	.870	.877	.885	.893	.901	.909
.06	1.008	1.017	1.026	1.034	1.043	1.053	1.062	1.071	1.081	1.091
.07	1.176	1.186	1.197	1.207	1.217	1.228	1.239	1.250	1.261	1.273
.08	1.345	1.356	1.368	1.379	1.391	1.404	1.416	1.429	1.441	1.455
.09	1.513	1.525	1.538	1.552	1.565	1.579	1.593	1.607	1.622	1.636
5	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
5.4	.917	.000	.000	.000	.000	.000	.000	.000	.000	.000
'3	2.752	1.852	.935	.000	.000	.000	.000	.000	.000	.000
'2	4.587	3.704	2.804	1.887	.952	.000	.000	.000	.000	.000
'1	6.422	5.556	4.673	3.774	2.857	1.923	.971	.000	.000	.000
'0	8.257	7.407	6.542	5.660	4.762	3.846	2.913	1.961	.990	.000
4.9	10.092	9.259	8.411	7.547	6.667	5.769	4.854	3.922	2.970	2.000
'8	11.927	11.111	10.280	9.434	8.571	7.692	6.796	5.882	4.950	4.000
'7	13.761	12.963	12.150	11.321	10.476	9.615	8.738	7.843	6.931	6.000
'6	15.596	14.815	14.019	13.208	12.381	11.538	10.680	9.804	8.911	8.000
'5	17.431	16.667	15.888	15.094	14.286	13.462	12.621	11.765	10.891	10.000
'4	19.266	18.519	17.757	16.981	16.190	15.385	14.563	13.725	12.871	12.000
'3	21.101	20.370	19.626	18.868	18.095	17.308	16.505	15.686	14.851	14.000
'2	22.936	22.222	21.495	20.755	20.000	19.231	18.447	17.647	16.832	16.000
'1	24.771	24.074	23.364	22.642	21.905	21.154	20.388	19.608	18.812	18.000
'0	26.605	25.926	25.234	24.528	23.810	23.077	22.330	21.569	20.792	20.000

$1 + a_x$

5	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$1 + a_{x+n}$										
3'9	28'440	27'778	27'103	26'415	25'714	25'000	24'272	23'529	22'772	22'000
'8	30'275	29'630	28'972	28'302	27'619	26'923	26'214	25'490	24'752	24'000
'7	32'110	31'481	30'841	30'189	29'524	28'846	28'155	27'451	26'733	26'000
'6	33'945	33'333	32'710	32'075	31'429	30'769	30'097	29'412	28'713	28'000
'5	35'780	35'185	34'579	33'962	33'333	32'692	32'039	31'373	30'693	30'000
'4	37'615	37'037	36'449	35'849	35'238	34'615	33'981	33'333	32'673	32'000
'3	39'450	38'889	38'318	37'736	37'143	36'538	35'922	35'294	34'653	34'000
'2	41'284	40'741	40'187	39'623	39'048	38'462	37'864	37'255	36'634	36'000
'1	43'119	42'593	42'056	41'509	40'952	40'385	39'806	39'216	38'614	38'000
'0	44'954	44'444	43'925	43'396	42'857	42'308	41'748	41'176	40'594	40'000
2'9	46'789	46'296	45'794	45'283	44'762	44'231	43'689	43'137	42'574	42'000
'8	48'624	48'148	47'664	47'170	46'667	46'154	45'631	45'098	44'554	44'000
'7	50'459	50'000	49'533	49'057	48'571	48'077	47'573	47'059	46'535	46'000
'6	52'294	51'852	51'402	50'943	50'476	50'000	49'515	49'020	48'515	48'000
'5	54'128	53'704	53'271	52'830	52'381	51'923	51'456	50'980	50'495	50'000
'4	55'963	55'556	55'140	54'717	54'286	53'846	53'398	52'941	52'475	52'000
'3	57'798	57'407	57'009	56'604	56'190	55'769	55'340	54'902	54'455	54'000
'2	59'633	59'259	58'879	58'491	58'095	57'692	57'282	56'863	56'436	56'000
'1	61'468	61'111	60'748	60'377	60'000	59'615	59'223	58'824	58'416	58'000
'0	63'303	62'963	62'617	62'264	61'905	61'538	61'165	60'784	60'396	60'000
1'9	65'138	64'815	64'486	64'151	63'810	63'462	63'107	62'745	62'376	62'000
'8	66'972	66'667	66'355	66'038	65'714	65'385	65'049	64'706	64'356	64'000
'7	68'807	68'519	68'224	67'925	67'619	67'308	66'990	66'667	66'337	66'000
'6	70'642	70'370	70'093	69'811	69'524	69'231	68'932	68'627	68'317	68'000
'5	72'477	72'222	71'963	71'698	71'429	71'154	70'874	70'588	70'297	70'000
'4	74'312	74'074	73'832	73'585	73'333	73'077	72'816	72'549	72'277	72'000
'3	76'147	75'926	75'701	75'472	75'238	75'000	74'757	74'510	74'257	74'000
'2	77'982	77'778	77'570	77'358	77'143	76'923	76'699	76'471	76'238	76'000
'1	79'816	79'630	79'439	79'245	79'048	78'846	78'641	78'431	78'218	78'000
'0	81'651	81'481	81'308	81'132	80'952	80'769	80'583	80'392	80'198	80'000
.01	.183	.185	.187	.189	.190	.192	.194	.196	.198	.200
.02	.367	.370	.374	.377	.381	.385	.388	.392	.396	.400
.03	.550	.556	.561	.566	.571	.577	.583	.588	.594	.600
.04	.734	.741	.748	.755	.762	.769	.777	.784	.792	.800
.05	.917	.926	.935	.943	.952	.962	.971	.980	.990	1.000
.06	1.101	1.111	1.121	1.132	1.143	1.154	1.165	1.176	1.188	1.200
.07	1.284	1.296	1.308	1.321	1.333	1.346	1.359	1.373	1.386	1.400
.08	1.468	1.481	1.495	1.509	1.524	1.538	1.553	1.569	1.584	1.600
.09	1.651	1.667	1.682	1.698	1.714	1.731	1.748	1.765	1.782	1.800

		$\pi_{x+n}$									
4	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50	
$\pi_x$											
4'90	1'010	'000	'000	'000	'000	'000	'000	'000	'000	'000	
'85	2'020	1'020	'000	'000	'000	'000	'000	'000	'000	'000	
'80	3'030	2'041	1'031	0'000	'000	'000	'000	'000	'000	'000	
'75	4'040	3'061	2'062	1'042	'000	'000	'000	'000	'000	'000	
'70	5'051	4'082	3'093	2'083	1'053	'000	'000	'000	'000	'000	
'65	6'061	5'102	4'124	3'125	2'105	1'064	'000	'000	'000	'000	
'60	7'071	6'122	5'155	4'167	3'158	2'128	1'075	'000	'000	'000	
'55	8'081	7'143	6'186	5'208	4'211	3'191	2'151	1'087	'000	'000	
'50	9'091	8'163	7'216	6'250	5'263	4'255	3'226	2'174	1'099	'000	
'45	10'101	9'184	8'247	7'292	6'316	5'319	4'301	3'261	2'198	1'111	
'40	11'111	10'204	9'278	8'333	7'368	6'383	5'376	4'348	3'297	2'222	
'35	12'121	11'224	10'309	9'375	8'421	7'447	6'452	5'435	4'396	3'333	
'30	13'131	12'245	11'340	10'417	9'474	8'511	7'527	6'522	5'495	4'444	
'25	14'141	13'265	12'371	11'458	10'526	9'574	8'602	7'609	6'593	5'556	
'20	15'152	14'286	13'402	12'500	11'579	10'638	9'677	8'696	7'692	6'667	
'15	16'162	15'306	14'433	13'542	12'632	11'702	10'753	9'783	8'791	7'778	
'10	17'172	16'327	15'464	14'583	13'684	12'766	11'828	10'870	9'890	8'889	
'05	18'182	17'347	16'495	15'625	14'737	13'830	12'903	11'957	10'989	10'000	
'00	19'192	18'367	17'526	16'667	15'789	14'894	13'978	13'043	12'088	11'111	
3'95	20'202	19'388	18'557	17'708	16'842	15'957	15'054	14'130	13'187	12'222	
'90	21'212	20'408	19'588	18'750	17'895	17'021	16'129	15'217	14'286	13'333	
'85	22'222	21'429	20'619	19'792	18'947	18'085	17'204	16'304	15'385	14'444	
'80	23'232	22'449	21'649	20'833	20'000	19'149	18'280	17'391	16'484	15'556	
'75	24'242	23'469	22'680	21'875	21'053	20'213	19'355	18'478	17'582	16'667	
'70	25'253	24'490	23'711	22'917	22'105	21'277	20'430	19'565	18'681	17'778	
'65	26'263	25'510	24'742	23'958	23'158	22'340	21'505	20'652	19'780	18'889	
'60	27'273	26'531	25'773	25'000	24'211	23'404	22'581	21'739	20'879	20'000	
'55	28'283	27'551	26'804	26'042	25'263	24'468	23'656	22'826	21'978	21'111	
'50	29'293	28'571	27'835	27'083	26'316	25'532	24'731	23'913	23'077	22'222	
'45	30'303	29'592	28'866	28'125	27'368	26'596	25'806	25'000	24'176	23'333	
'40	31'313	30'612	29'897	29'167	28'421	27'660	26'882	26'087	25'275	24'444	
'35	32'323	31'633	30'928	30'208	29'474	28'723	27'957	27'174	26'374	25'556	
'30	33'333	32'653	31'959	31'250	30'526	29'787	29'032	28'261	27'473	26'667	
'25	34'343	33'673	32'990	32'292	31'579	30'851	30'108	29'348	28'571	27'778	
'20	35'354	34'694	34'021	33'333	32'632	31'915	31'183	30'435	29'670	28'889	
'15	36'364	35'714	35'052	34'375	33'684	32'979	32'258	31'522	30'769	30'000	
'10	37'374	36'735	36'082	35'417	34'737	34'043	33'333	32'609	31'868	31'111	
'05	38'384	37'755	37'113	36'458	35'789	35'106	34'409	33'696	32'967	32'222	
'00	39'394	38'776	38'144	37'500	36'842	36'170	35'484	34'783	34'066	33'333	
2'95	40'404	39'796	39'175	38'542	37'895	37'234	36'559	35'870	35'165	34'444	
'90	41'414	40'816	40'206	39'583	38'947	38'298	37'634	36'957	36'264	35'556	
'85	42'424	41'837	41'237	40'625	40'000	39'362	38'710	38'043	37'363	36'667	
'80	43'434	42'857	42'268	41'667	41'053	40'426	39'785	39'130	38'462	37'778	
'75	44'444	43'878	43'299	42'708	42'105	41'489	40'860	40'217	39'560	38'889	
'70	45'455	44'898	44'330	43'750	43'158	42'553	41'935	41'304	40'659	40'000	
'65	46'465	45'918	45'361	44'792	44'211	43'617	43'011	42'391	41'758	41'111	
'60	47'475	46'939	46'392	45'833	45'263	44'681	44'086	43'478	42'857	42'222	
'55	48'485	47'959	47'423	46'875	46'316	45'745	45'161	44'565	43'956	43'333	
'50	49'495	48'980	48'454	47'917	47'368	46'809	46'237	45'652	45'055	44'444	

NOTE.—For explanation of change in headings to  $\pi_{x+n}$  and  $\pi_x$ , see "Introduction."



$\pi_{x+1}$										
4	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$\pi_x$										
2'45	50'505	50'000	49'485	48'958	48'421	47'872	47'312	46'739	46'154	45'556
'40	51'515	51'020	50'515	50'000	49'474	48'936	48'387	47'826	47'253	46'667
'35	52'525	52'041	51'546	51'042	50'526	50'000	49'462	48'913	48'352	47'778
'30	53'535	53'061	52'577	52'083	51'579	51'064	50'538	50'000	49'451	48'889
'25	54'545	54'082	53'608	53'125	52'632	52'128	51'613	51'087	50'549	50'000
'20	55'556	55'102	54'639	54'167	53'684	53'192	52'688	52'174	51'648	51'111
'15	56'566	56'122	55'670	55'208	54'737	54'255	53'763	53'261	52'747	52'222
'10	57'576	57'143	56'701	56'250	55'789	55'319	54'839	54'348	53'846	53'333
'05	58'586	58'163	57'732	57'292	56'842	56'383	55'914	55'435	54'945	54'444
'00	59'596	59'184	58'763	58'333	57'895	57'447	56'989	56'522	56'044	55'556
1'95	60'606	60'204	59'794	59'375	58'947	58'511	58'065	57'609	57'143	56'667
'90	61'616	61'224	60'825	60'417	60'000	59'574	59'140	58'696	58'242	57'778
'85	62'626	62'245	61'856	61'458	61'053	60'638	60'215	59'783	59'341	58'889
'80	63'636	63'265	62'887	62'500	62'105	61'702	61'290	60'870	60'440	60'000
'75	64'646	64'286	63'918	63'542	63'158	62'766	62'366	61'957	61'538	61'111
'70	65'657	65'306	64'948	64'583	64'211	63'830	63'441	63'043	62'637	62'222
'65	66'667	66'327	65'979	65'625	65'263	64'894	64'516	64'130	63'736	63'333
'60	67'677	67'347	67'010	66'667	66'316	65'957	65'591	65'217	64'835	64'444
'55	68'687	68'367	68'041	67'708	67'368	67'021	66'667	66'304	65'934	65'556
'50	69'697	69'388	69'072	68'750	68'421	68'085	67'742	67'391	67'033	66'667
'45	70'707	70'408	70'103	69'792	69'474	69'149	68'817	68'478	68'132	67'778
'40	71'717	71'429	71'134	70'833	70'526	70'213	69'892	69'565	69'231	68'889
'35	72'727	72'449	72'165	71'875	71'579	71'277	70'968	70'652	70'330	70'000
'30	73'737	73'469	73'196	72'917	72'632	72'340	72'043	71'739	71'429	71'111
'25	74'747	74'490	74'227	73'958	73'684	73'404	73'118	72'826	72'527	72'222
'20	75'758	75'510	75'258	75'000	74'737	74'468	74'194	73'913	73'626	73'333
'15	76'768	76'531	76'289	76'042	75'789	75'532	75'269	75'000	74'725	74'444
'10	77'778	77'551	77'320	77'083	76'842	76'596	76'344	76'087	75'824	75'556
'05	78'788	78'571	78'351	78'125	77'895	77'660	77'419	77'174	76'923	76'667
'00	79'798	79'592	79'381	79'167	78'947	78'723	78'495	78'261	78'022	77'778
'01	·202	·204	·206	·208	·211	·213	·215	·217	·220	·222
'02	·404	·408	·412	·417	·421	·426	·430	·435	·440	·444
'03	·606	·612	·619	·625	·632	·638	·645	·652	·659	·667
'04	·808	·816	·825	·833	·842	·851	·860	·870	·879	·889

4	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
4'40	1'124	'000	'000	'000	'000	'000	'000	'000	'000	'000
'35	2'247	1'136	'000	'000	'000	'000	'000	'000	'000	'000
'30	3'371	2'273	1'149	0'000	'000	'000	'000	'000	'000	'000
'25	4'494	3'409	2'299	-1'163	'000	'000	'000	'000	'000	'000
'01	·225	·227	·230	·233	·235	·238	·241	·244	·247	·250
'02	·449	·455	·460	·465	·471	·476	·482	·488	·494	·500
'03	·674	·682	·690	·698	·706	·714	·723	·732	·741	·750
'04	·899	·909	·920	·930	·941	·952	·964	·976	·988	1'000

NOTE.—For explanation of change in headings to  $\pi_{x+1}$  and  $\pi_x$ , see "Introduction."



$\pi_{x+n}$										
4	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$\pi_x$										
4'20	5'618	4'545	3'448	2'326	1'176	'000	'000	'000	'000	'000
'15	6'742	5'682	4'598	3'488	2'353	1'190	'000	'000	'000	'000
'10	7'865	6'818	5'747	4'651	3'529	2'381	1'205	'000	'000	'000
'05	8'989	7'955	6'897	5'814	4'706	3'571	2'410	1'220	'000	'000
'00	10'112	9'091	8'046	6'977	5'882	4'762	3'614	2'439	1'235	'000
3'95	11'236	10'227	9'195	8'140	7'059	5'952	4'819	3'659	2'469	1'250
'90	12'360	11'364	10'345	9'302	8'235	7'143	6'024	4'878	3'704	2'500
'85	13'483	12'500	11'494	10'465	9'412	8'333	7'229	6'098	4'938	3'750
'80	14'607	13'636	12'644	11'628	10'588	9'524	8'434	7'317	6'173	5'000
'75	15'730	14'773	13'793	12'791	11'765	10'714	9'639	8'537	7'407	6'250
'70	16'854	15'909	14'943	13'953	12'941	11'905	10'843	9'756	8'642	7'500
'65	17'978	17'045	16'092	15'116	14'118	13'095	12'048	10'976	9'877	8'750
'60	19'101	18'182	17'241	16'279	15'294	14'286	13'253	12'195	11'111	10'000
'55	20'225	19'318	18'391	17'442	16'471	15'476	14'458	13'415	12'346	11'250
'50	21'348	20'455	19'540	18'605	17'647	16'667	15'663	14'634	13'580	12'500
'45	22'472	21'591	20'690	19'767	18'824	17'857	16'867	15'854	14'815	13'750
'40	23'596	22'727	21'839	20'930	20'000	19'048	18'072	17'073	16'049	15'000
'35	24'719	23'864	22'989	22'093	21'176	20'238	19'277	18'293	17'284	16'250
'30	25'843	25'000	24'138	23'256	22'353	21'429	20'482	19'512	18'519	17'500
'25	26'966	26'136	25'287	24'419	23'529	22'619	21'687	20'732	19'753	18'750
'20	28'090	27'273	26'437	25'581	24'706	23'810	22'892	21'951	20'988	20'000
'15	29'213	28'409	27'586	26'744	25'882	25'000	24'096	23'171	22'222	21'250
'10	30'337	29'545	28'736	27'907	27'059	26'190	25'301	24'390	23'457	22'500
'05	31'461	30'682	29'885	29'070	28'235	27'381	26'506	25'610	24'691	23'750
'00	32'584	31'818	31'034	30'233	29'412	28'571	27'711	26'829	25'926	25'000
2'95	33'708	32'955	32'184	31'395	30'588	29'762	28'916	28'049	27'160	26'250
'90	34'831	34'091	33'333	32'558	31'765	30'952	30'120	29'268	28'395	27'500
'85	35'955	35'227	34'483	33'721	32'941	32'143	31'325	30'488	29'630	28'750
'80	37'079	36'364	35'632	34'884	34'118	33'333	32'530	31'707	30'864	30'000
'75	38'202	37'500	36'782	36'047	35'294	34'524	33'735	32'927	32'099	31'250
'70	39'326	38'636	37'931	37'209	36'471	35'714	34'940	34'146	33'333	32'500
'65	40'449	39'773	39'080	38'372	37'647	36'905	36'145	35'366	34'568	33'750
'60	41'573	40'909	40'230	39'535	38'824	38'095	37'349	36'585	35'802	35'000
'55	42'697	42'045	41'379	40'698	40'000	39'286	38'554	37'805	37'037	36'250
'50	43'820	43'182	42'529	41'860	41'176	40'476	39'759	39'024	38'272	37'500
'45	44'944	44'318	43'678	43'023	42'353	41'667	40'964	40'244	39'506	38'750
'40	46'067	45'455	44'828	44'186	43'529	42'857	42'169	41'463	40'741	40'000
'35	47'191	46'591	45'977	45'349	44'706	44'048	43'374	42'683	41'975	41'250
'30	48'315	47'727	47'126	46'512	45'882	45'238	44'578	43'902	43'210	42'500
'25	49'438	48'864	48'276	47'674	47'059	46'429	45'783	45'122	44'444	43'750
'20	50'562	50'000	49'425	48'837	48'235	47'619	46'988	46'341	45'679	45'000
'15	51'685	51'136	50'575	50'000	49'412	48'810	48'193	47'561	46'914	46'250
'10	52'809	52'273	51'724	51'163	50'588	50'000	49'398	48'780	48'148	47'500
'05	53'933	53'409	52'874	52'326	51'765	51'190	50'602	50'000	49'383	48'750
'00	55'056	54'545	54'023	53'488	52'941	52'381	51'807	51'220	50'617	50'000
1'95	56'180	55'682	55'172	54'651	54'118	53'571	53'012	52'439	51'852	51'250
'90	57'303	56'818	56'322	55'814	55'294	54'762	54'217	53'659	53'086	52'500
'85	58'427	57'955	57'471	56'977	56'471	55'952	55'422	54'878	54'321	53'750
'80	59'551	59'091	58'621	58'140	57'647	57'143	56'627	56'098	55'556	55'000
'75	60'674	60'227	59'770	59'302	58'824	58'333	57'831	57'317	56'790	56'250

NOTE.—For explanation of change in headings to  $\pi_{x+n}$  and  $\pi_x$ , see "Introduction."

$\pi_{x+n}$										
4	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$\pi_x$										
1'70	61'798	61'364	60'920	60'465	60'000	59'524	59'036	58'537	58'025	57'500
'65	62'921	62'500	62'069	61'628	61'176	60'714	60'241	59'756	59'259	58'750
'60	64'045	63'636	63'218	62'791	62'353	61'905	61'446	60'976	60'494	60'000
'55	65'169	64'773	64'368	63'953	63'529	63'095	62'651	62'195	61'728	61'250
'50	66'292	65'909	65'517	65'116	64'706	64'286	63'855	63'415	62'963	62'500
'45	67'416	67'045	66'667	66'279	65'882	65'476	65'060	64'634	64'198	63'750
'40	68'539	68'182	67'816	67'442	67'059	66'667	66'265	65'854	65'432	65'000
'35	69'663	69'318	68'966	68'605	68'235	67'857	67'470	67'073	66'667	66'250
'30	70'787	70'455	70'115	69'767	69'412	69'048	68'675	68'293	67'901	67'500
'25	71'910	71'591	71'264	70'930	70'588	70'238	69'880	69'512	69'136	68'750
'20	73'034	72'727	72'414	72'093	71'765	71'429	71'084	70'732	70'370	70'000
'15	74'157	73'864	73'563	73'256	72'941	72'619	72'289	71'951	71'605	71'250
'10	75'281	75'000	74'713	74'419	74'118	73'810	73'494	73'171	72'840	72'500
'05	76'405	76'136	75'862	75'581	75'294	75'000	74'699	74'390	74'074	73'750
'00	77'528	77'273	77'012	76'744	76'471	76'190	75'904	75'610	75'309	75'000
'01	'225	'227	'230	'233	'235	'238	'241	'244	'247	'250
'02	'449	'455	'460	'465	'471	'476	'482	'488	'494	'500
'03	'674	'682	'690	'698	'706	'714	'723	'732	'741	'750
'04	'899	'909	'920	'930	'941	'952	'964	'976	'988	1'000

3	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
3'90	1'266	'000	'000	'000	'000	'000	'000	'000	'000	'000
'85	2'532	1'282	'000	'000	'000	'000	'000	'000	'000	'000
'80	3'797	2'564	1'299	'000	'000	'000	'000	'000	'000	'000
'75	5'063	3'846	2'597	1'316	'000	'000	'000	'000	'000	'000
'70	6'329	5'128	3'896	2'632	1'333	'000	'000	'000	'000	'000
'65	7'595	6'410	5'195	3'947	2'667	1'351	'000	'000	'000	'000
'60	8'861	7'692	6'494	5'263	4'000	2'703	1'370	'000	'000	'000
'55	10'127	8'974	7'792	6'579	5'333	4'054	2'740	1'389	'000	'000
'50	11'392	10'256	9'091	7'895	6'667	5'405	4'110	2'778	1'408	'000
'45	12'658	11'538	10'390	9'211	8'000	6'757	5'479	4'167	2'817	1'429
'40	13'924	12'821	11'688	10'526	9'333	8'108	6'849	5'556	4'225	2'857
'35	15'190	14'103	12'987	11'842	10'667	9'459	8'219	6'944	5'634	4'286
'30	16'456	15'385	14'286	13'158	12'000	10'811	9'589	8'333	7'042	5'714
'25	17'722	16'667	15'584	14'474	13'333	12'162	10'959	9'722	8'451	7'143
'20	18'987	17'949	16'883	15'789	14'667	13'514	12'329	11'111	9'859	8'571
'15	20'253	19'231	18'182	17'105	16'000	14'865	13'699	12'500	11'268	10'000
'10	21'519	20'513	19'481	18'421	17'333	16'216	15'068	13'889	12'676	11'429
'05	22'785	21'795	20'779	19'737	18'667	17'568	16'438	15'278	14'085	12'857
'00	24'051	23'077	22'078	21'053	20'000	18'919	17'808	16'667	15'493	14'286
'01	'253	'256	'260	'263	'267	'270	'274	'278	'282	'286
'02	'506	'513	'519	'526	'533	'541	'548	'556	'563	'571
'03	'759	'769	'779	'789	'800	'811	'822	'833	'845	'857
'04	1'013	1'026	1'039	1'053	1'067	1'081	1'096	1'111	1'127	1'143

NOTE.—For explanation of change in headings to  $\pi_{x+n}$  and  $\pi_x$ , see "Introduction."

3	$\pi_{x+n}$									
	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
$\pi_x$										
2'95	25'316	24'359	23'377	22'368	21'333	20'270	19'178	18'056	16'901	15'714
'90	26'582	25'641	24'675	23'684	22'667	21'622	20'548	19'444	18'310	17'143
'85	27'848	26'923	25'974	25'000	24'000	22'973	21'918	20'833	19'718	18'571
'80	29'114	28'205	27'273	26'316	25'333	24'324	23'288	22'222	21'127	20'000
'75	30'380	29'487	28'571	27'632	26'667	25'676	24'658	23'611	22'535	21'429
'70	31'646	30'769	29'870	28'947	28'000	27'027	26'027	25'000	23'944	22'857
'65	32'911	32'051	31'169	30'263	29'333	28'378	27'397	26'389	25'352	24'286
'60	34'177	33'333	32'468	31'579	30'667	29'730	28'767	27'778	26'761	25'714
'55	35'443	34'615	33'766	32'895	32'000	31'081	30'137	29'167	28'169	27'143
'50	36'709	35'897	35'065	34'211	33'333	32'432	31'507	30'556	29'577	28'571
'45	37'975	37'179	36'364	35'526	34'667	33'784	32'877	31'944	30'986	30'000
'40	39'241	38'462	37'662	36'842	36'000	35'135	34'247	33'333	32'394	31'429
'35	40'506	39'744	38'961	38'158	37'333	36'486	35'616	34'722	33'803	32'857
'30	41'772	41'026	40'260	39'474	38'667	37'838	36'986	36'111	35'211	34'286
'25	43'038	42'308	41'558	40'789	40'000	39'189	38'356	37'500	36'620	35'714
'20	44'304	43'590	42'857	42'105	41'333	40'541	39'726	38'889	38'028	37'143
'15	45'570	44'872	44'156	43'421	42'667	41'892	41'096	40'278	39'437	38'571
'10	46'835	46'154	45'455	44'737	44'000	43'243	42'466	41'667	40'845	40'000
'05	48'101	47'436	46'753	46'053	45'333	44'595	43'836	43'056	42'254	41'429
'00	49'367	48'718	48'052	47'368	46'667	45'946	45'205	44'444	43'662	42'857
1'95	50'633	50'000	49'351	48'684	48'000	47'297	46'575	45'833	45'070	44'286
'90	51'899	51'282	50'649	50'000	49'333	48'649	47'945	47'222	46'479	45'714
'85	53'165	52'564	51'948	51'316	50'667	50'000	49'315	48'611	47'887	47'143
'80	54'430	53'846	53'247	52'632	52'000	51'351	50'685	50'000	49'296	48'571
'75	55'696	55'128	54'545	53'947	53'333	52'703	52'055	51'389	50'704	50'000
'70	56'962	56'410	55'844	55'263	54'667	54'054	53'425	52'778	52'113	51'429
'65	58'228	57'692	57'143	56'579	56'000	55'405	54'795	54'167	53'521	52'857
'60	59'494	58'974	58'442	57'895	57'333	56'757	56'164	55'556	54'930	54'286
'55	60'760	60'256	59'740	59'211	58'667	58'108	57'534	56'944	56'338	55'714
'50	62'025	61'538	61'039	60'526	60'000	59'459	58'904	58'333	57'746	57'143
'45	63'291	62'821	62'338	61'842	61'333	60'811	60'274	59'722	59'155	58'571
'40	64'557	64'103	63'636	63'158	62'667	62'162	61'644	61'111	60'563	60'000
'35	65'823	65'385	64'935	64'474	64'000	63'514	63'014	62'500	61'972	61'429
'30	67'089	66'667	66'234	65'789	65'333	64'865	64'384	63'889	63'380	62'857
'25	68'354	67'949	67'532	67'105	66'667	66'216	65'753	65'278	64'789	64'286
'20	69'620	69'231	68'831	68'421	68'000	67'568	67'123	66'667	66'197	65'714
'15	70'886	70'513	70'130	69'737	69'333	68'919	68'493	68'056	67'606	67'143
'10	72'152	71'795	71'429	71'053	70'667	70'270	69'863	69'444	69'014	68'571
'05	73'418	73'077	72'727	72'368	72'000	71'622	71'233	70'833	70'423	70'000
'00	74'684	74'359	74'026	73'684	73'333	72'973	72'603	72'222	71'831	71'429
'01	·253	·256	·260	·263	·267	·270	·274	·278	·282	·286
'02	·506	·513	·519	·526	·533	·541	·548	·556	·563	·571
'03	·759	·769	·779	·789	·800	·811	·822	·833	·845	·857
'04	1'013	1'026	1'039	1'053	1'067	1'081	1'096	1'111	1'127	1'143

NOTE.—For explanation of change in headings to  $\pi_{x+n}$  and  $\pi_x$ , see "Introduction."



3	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$\pi_x$										
3'40	1'449	'000	'000	'000	'000	'000	'000	'000	'000	'000
'35	2'899	1'471	'000	'000	'000	'000	'000	'000	'000	'000
'30	4'348	2'941	1'493	'000	'000	'000	'000	'000	'000	'000
'25	5'797	4'412	2'985	1'515	'000	'000	'000	'000	'000	'000
'20	7'246	5'882	4'478	3'030	1'538	'000	'000	'000	'000	'000
'15	8'696	7'353	5'970	4'545	3'077	1'563	'000	'000	'000	'000
'10	10'145	8'824	7'463	6'061	4'615	3'125	1'587	'000	'000	'000
'05	11'594	10'294	8'955	7'576	6'154	4'688	3'175	1'613	'000	'000
'00	13'043	11'765	10'448	9'091	7'692	6'250	4'762	3'226	1'639	'000
2'95	14'493	13'235	11'940	10'606	9'231	7'813	6'349	4'839	3'279	1'667
'90	15'942	14'706	13'433	12'121	10'769	9'375	7'937	6'452	4'918	3'333
'85	17'391	16'176	14'925	13'636	12'308	10'938	9'524	8'065	6'557	5'000
'80	18'841	17'647	16'418	15'152	13'846	12'500	11'111	9'677	8'197	6'667
'75	20'290	19'118	17'910	16'667	15'385	14'063	12'698	11'290	9'836	8'333
'70	21'739	20'588	19'403	18'182	16'923	15'625	14'286	12'903	11'475	10'000
'65	23'188	22'059	20'896	19'697	18'462	17'188	15'873	14'516	13'115	11'667
'60	24'638	23'529	22'388	21'212	20'000	18'750	17'460	16'129	14'754	13'333
'55	26'087	25'000	23'881	22'727	21'538	20'313	19'048	17'742	16'393	15'000
'50	27'536	26'471	25'373	24'242	23'077	21'875	20'635	19'355	18'033	16'667
'45	28'986	27'941	26'866	25'758	24'615	23'438	22'222	20'968	19'672	18'333
'40	30'435	29'412	28'358	27'273	26'154	25'000	23'810	22'581	21'311	20'000
'35	31'884	30'882	29'851	28'788	27'692	26'563	25'397	24'194	22'951	21'667
'30	33'333	32'353	31'343	30'303	29'231	28'125	26'984	25'806	24'590	23'333
'25	34'783	33'824	32'836	31'818	30'769	29'688	28'571	27'419	26'230	25'000
'20	36'232	35'294	34'328	33'333	32'308	31'250	30'159	29'032	27'869	26'667
'15	37'681	36'765	35'821	34'848	33'846	32'813	31'746	30'645	29'508	28'333
'10	39'130	38'235	37'313	36'364	35'385	34'375	33'333	32'258	31'148	30'000
'05	40'580	39'706	38'806	37'879	36'923	35'938	34'921	33'871	32'787	31'667
'00	42'029	41'176	40'299	39'394	38'462	37'500	36'508	35'484	34'426	33'333
1'95	43'478	42'647	41'791	40'909	40'000	39'063	38'095	37'097	36'066	35'000
'90	44'928	44'118	43'284	42'424	41'538	40'625	39'683	38'710	37'705	36'667
'85	46'377	45'588	44'776	43'939	43'077	42'188	41'270	40'323	39'344	38'333
'80	47'826	47'059	46'269	45'455	44'615	43'750	42'857	41'935	40'984	40'000
'75	49'275	48'529	47'761	46'970	46'154	45'313	44'444	43'548	42'623	41'667
'70	50'725	50'000	49'254	48'485	47'692	46'875	46'032	45'161	44'262	43'333
'65	52'174	51'471	50'746	50'000	49'231	48'438	47'619	46'774	45'902	45'000
'60	53'623	52'941	52'239	51'515	50'769	50'000	49'206	48'387	47'541	46'667
'55	55'072	54'412	53'731	53'030	52'308	51'563	50'794	50'000	49'180	48'333
'50	56'522	55'882	55'224	54'545	53'846	53'125	52'381	51'613	50'820	50'000
'45	57'971	57'353	56'716	56'061	55'385	54'688	53'968	53'226	52'459	51'667
'40	59'420	58'824	58'209	57'576	56'923	56'250	55'556	54'839	54'098	53'333
'35	60'870	60'294	59'702	59'091	58'462	57'813	57'143	56'452	55'738	55'000
'30	62'319	61'765	61'194	60'606	60'000	59'375	58'730	58'065	57'377	56'667
'25	63'768	63'235	62'687	62'121	61'538	60'938	60'317	59'677	59'016	58'333
'01	'290	'291	'299	'303	'308	'313	'317	'323	'328	'333
'02	'580	'588	'597	'606	'615	'625	'635	'645	'656	'667
'03	'870	'882	'896	'909	'923	'938	'952	'968	'984	1'000
'04	1'159	1'176	1'194	1'212	1'231	1'250	1'270	1'290	1'311	1'333

NOTE.—For explanation of change in headings to  $\pi_{x+n}$  and  $\pi_x$ , see "Introduction."

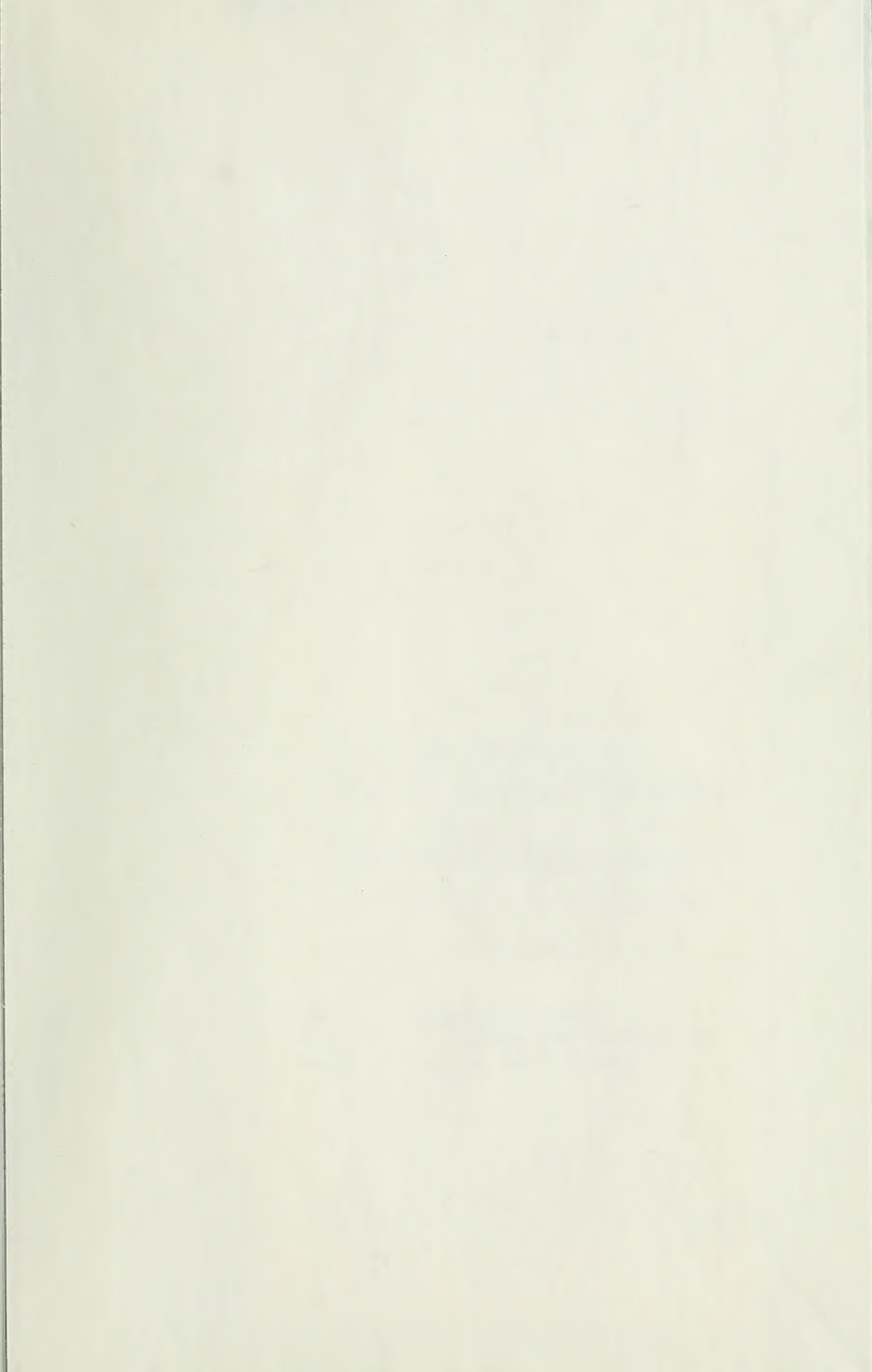


$\pi_{x+n}$										
3	'45	'40	'35	'30	'25	'20	'15	'10	'05	'00
$\pi_x$										
1'20	65'217	64'706	64'179	63'636	63'077	62'500	61'905	61'290	60'656	60'000
'15	66'667	66'176	65'672	65'152	64'615	64'063	63'492	62'903	62'295	61'667
'10	68'116	67'647	67'164	66'667	66'154	65'625	65'079	64'516	63'934	63'333
'05	69'565	69'118	68'657	68'182	67'692	67'188	66'667	66'129	65'574	65'000
'00	71'014	70'588	70'149	69'697	69'231	68'750	68'254	67'742	67'213	66'667
'01	'290	'291	'299	'303	'308	'313	'317	'323	'328	'333
'02	'580	'588	'597	'606	'615	'625	'635	'645	'656	'667
'03	'870	'882	'896	'909	'923	'938	'952	'968	'981	1'000
'04	1'159	1'176	1'191	1'212	1'231	1'250	1'270	1'290	1'311	1'333
2	'95	'90	'85	'80	'75	'70	'65	'60	'55	'50
2'90	1'695	'000	'000	'000	'000	'000	'000	'000	'000	'000
'85	3'390	1'724	'000	'000	'000	'000	'000	'000	'000	'000
'80	5'085	3'448	1'754	'000	'000	'000	'000	'000	'000	'000
'75	6'780	5'172	3'509	1'786	'000	'000	'000	'000	'000	'000
'70	8'475	6'897	5'263	3'571	1'818	'000	'000	'000	'000	'000
'65	10'169	8'621	7'018	5'357	3'636	1'852	'000	'000	'000	'000
'60	11'864	10'345	8'772	7'143	5'455	3'704	1'887	'000	'000	'000
'55	13'559	12'069	10'526	8'929	7'273	5'556	3'774	1'923	'000	'000
'50	15'254	13'793	12'281	10'714	9'091	7'407	5'660	3'846	1'961	'000
'45	16'949	15'517	14'035	12'500	10'909	9'259	7'547	5'769	3'922	2'000
'40	18'644	17'241	15'789	14'286	12'727	11'111	9'434	7'692	5'882	4'000
'35	20'339	18'966	17'544	16'071	14'545	12'963	11'321	9'615	7'843	6'000
'30	22'034	20'690	19'298	17'857	16'364	14'815	13'208	11'538	9'804	8'000
'25	23'729	22'414	21'053	19'643	18'182	16'667	15'094	13'462	11'765	10'000
'20	25'424	24'138	22'807	21'429	20'000	18'519	16'981	15'385	13'725	12'000
'15	27'119	25'862	24'561	23'214	21'818	20'370	18'868	17'308	15'686	14'000
'10	28'814	27'586	26'316	25'000	23'636	22'222	20'755	19'231	17'647	16'000
'05	30'508	29'310	28'070	26'786	25'455	24'074	22'642	21'154	19'608	18'000
'00	32'203	31'034	29'825	28'571	27'273	25'926	24'528	23'077	21'569	20'000
1'95	33'898	32'759	31'579	30'357	29'091	27'778	26'415	25'000	23'529	22'000
'90	35'593	34'483	33'333	32'143	30'909	29'630	28'302	26'923	25'490	24'000
'85	37'288	36'207	35'088	33'929	32'727	31'481	30'189	28'846	27'451	26'000
'80	38'983	37'931	36'842	35'714	34'545	33'333	32'075	30'769	29'412	28'000
'75	40'678	39'655	38'596	37'500	36'304	35'185	33'962	32'692	31'373	30'000
'70	42'373	41'379	40'351	39'286	38'182	37'037	35'849	34'615	33'333	32'000
'65	44'068	43'103	42'105	41'071	40'000	38'889	37'736	36'538	35'294	34'000
'60	45'763	44'828	43'860	42'857	41'818	40'741	39'623	38'462	37'255	36'000
'55	47'458	46'552	45'614	44'643	43'636	42'593	41'509	40'385	39'216	38'000
'50	49'153	48'276	47'368	46'429	45'455	44'444	43'396	42'308	41'176	40'000
'45	50'847	50'000	49'123	48'214	47'273	46'296	45'283	44'231	43'137	42'000
'40	52'542	51'724	50'877	50'000	49'091	48'148	47'170	46'154	45'098	44'000
'35	54'237	53'448	52'632	51'786	50'909	50'000	49'057	48'077	47'059	46'000
'30	55'932	55'172	54'386	53'571	52'727	51'852	50'943	50'000	49'020	48'000
'25	57'627	56'897	56'140	55'357	54'545	53'704	52'830	51'923	50'980	50'000

NOTE.—For explanation of change in headings to  $\pi_{x+n}$  and  $\pi_x$ , see "Introduction."











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